MAY 1954

COMMERCIAL REFRIGERATION & AIR CONDITIONING

Common Services

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"USE THE USER"

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MERCHANDISING, SELLING, INSTALLATION AND MAINTENANCE OF AIR CONDITIONING AND COMMERCIAL REFRIGERATION EQUIPMENT you don't have to be a prize

to sell COPELAMETIC

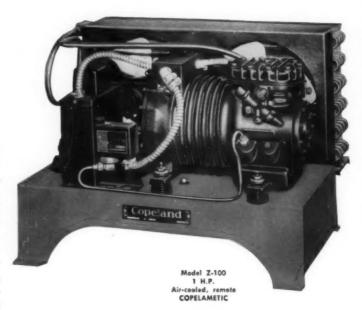
THE ACCESSIBLE HERMETIC



Just give 'em the facts. That's all. It buttons up your case and closes the sale.

Being a direct-drive motor-compressor, the compact Copelametic eliminates troublesome belts and seals. Manual oiling is not required. Those are facts a dealer likes to hear. But, your prime sales advantage with Copelametic is "accessibility." If the time ever comes when adjustment or parts replacement is advisable, you don't need to ship it back to the factory. That's where Copelametic differs from most hermetics. It can be serviced right on the spot.

Field-proved Copelametic units are quiet-running and highly efficient. There are sizes for all applications, remote or self-contained. Air-cooled models from 1/6 H.P. through 3 H.P., water-cooled from 1/3 H.P. through 7 1/2 H.P. Air-water combination in sizes through 3 H.P.



WRITE FOR CATALOG C-53





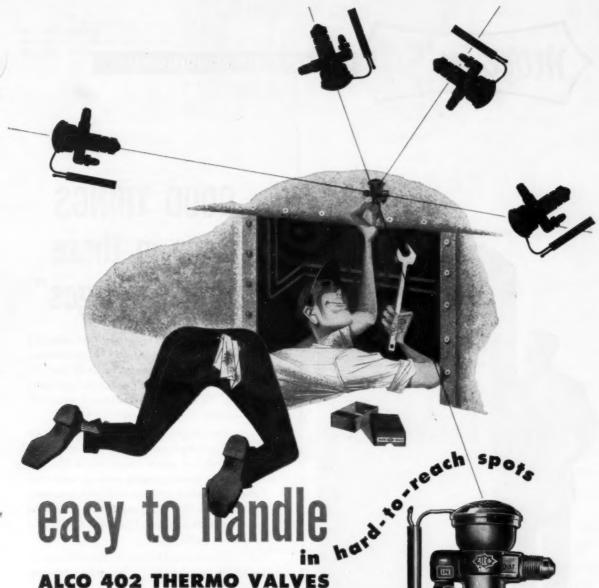




REFRIGERATION UNITS (OPEN - TYPE AND COPELAMETIC) WATER COOLERS

COPELAND REFRIGERATION CORPORATION · SIDNEY, OHIO

Circle No. 1 on Reader Service Card



THE SMALL-FIXTURE VALVES

You install them in any position-upright, sideways, upside down.

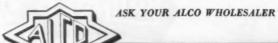
They're small and compact-fit in your hand.

You save work and time!

Built-in pressure limiting device prevents motor burn-out.



ALCO 402 - ENGINEERED FOR SERVICE ENGINEERS



Designers and Manufacturers of Thermostatic Expansion Valves; Evaporator Pressure Regulators; Solenoid Valves; Float Valves; Float Switches.

ALCO VALVE CO.

843 KINGSLAND AVE. . ST. LOUIS 5, MO.

6030

Circle No. 3 on Reader Service Card



NEW BRUNNER AIR CONDITIONERS

— in a variety of models for within-room or duct installation, are available in 2, 3, 5, 7½, 10, 15 and 20 H.P. sizes. Completely self-contained, easy to install, easy to service.

GOOD THINGS come in these large "packages"

There are several good things you'll like about the new line of Brunner "packaged" Air Conditioners. One thing, of course, is the full range of sizes and models which permit wide freedom in application planning. The simplicity of installation is welcomed, too — plenty of savings there.

And — another good thing about all Brunner Air Conditioners is the famous Brunner slow-speed condensing unit that means longer service life, less maintenance, lower operating costs—greater satisfaction all around for you—and your customers. In sizes up to 20 H.P., these Brunner packaged conditioners are engineered for dependability and trouble-free performance.

See these outstanding Brunner Air Conditioners . . . see all the "good things" in this great packaged line for 1954 . . .

BRUNNER MANUFACTURING CO., Dept. G-54 UTICA, N.Y.

The Brunner Co., Gainesville, Ga.

In Canada: Brunner Corp. (Canada) Limited, Toronto, Ontario





POST

BRUNNER AIR CONDITIONING IS ADVERTISED IN THE SATURDAY EVENING POST

Circle No. 4 on Reader Service Card

MAY, 1954 . COMMERCIAL REFRIGERATION

Established in 1944 as THE REFRIGERATION INDUSTRY, this ine has no official affiliation with mp, society, or association.

Commercial REFRIGERATIO AIR CONDITION

MAY, 1954 VOLUME 11, NO. 5

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BPA

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exceptionally low n

Here's the story about



genetron" REFRIGERANTS

The most important things to be sure of in the refrigerants you use are these: that their moisture content is *always* extremely low . . . that their overall purity *always* meets strict refrigeration standards . . . and that this high quality is *always* maintained, cylinder after cylinder—ton after ton.

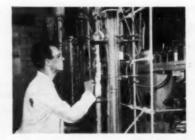
You can rely on "Genetron" refrigerants to measure up on every count—every time... and here's why!

First, because General Chemical has over five decades' experience making chemicals of unusually high purity for science and industry . . . actually supplies over 1,000 "precision products" that are certified to meet stringent specifications of America's scientific laboratories.

Second, because General Chemical is a pioneer and leading producer of fluorine compounds, the basic chemicals from which "Genetron" refrigerants are made. That means we know the materials behind organic fluorine refrigerants, how to handle them and



Production capacity of General's large new "Genetron" plant is now being tripled —enabling the company to supply industry's future needs most effectively.



"Genetron" refrigerants are products of General Chemical's extensive fluorine research program which has developed over 90 products for science and industry.

Circle No. 5 on Reader Service Card MAY, 1954



The special process used to make "Genetron" refrigerants employs advanced techniques and control methods that assure the exceptionally low moisture content of "Genetron" refrigerants.

COMMERCIAL REFRIGERATION



in a nutshell

build into them all the qualities required for use in today's refrigeration and air conditioning equipment. It means we have the mines, raw materials, the equipment and experience to serve the industry's needs effectively now-and in the future.

Third, because "Genetron" refrigerants are made by a special new modern process that guarantees exceptionally low moisture content and outstanding purity in every pound . . . and every ton of "Genetron."

That's the story of "Genetron" refrigerants "in a nutshell"!

... That's why you can be confident of getting the finest made, when you order "Genetron" refrigerants!

Always Ask for "Genetron" Refrigerants

For dichlorodifluoromethane-insist on "Genetron" 12 . . . for trichloromonofluoromethane, always ask for "Genetron" 11.

TRICHLOROMONOFLUOROMETHANE

DICHLORODIFLUOROMETHANE

"Genetron" 12 and "Genetron" 11 are identical and interchangeable in all respects with dichlorodifluoromethane and trichloromonofluoromethane pro-duced by any manufacturer meeting the same high refrigerant standards.



Write or 'phone the nearest General Chemical office listed below. Ask for FREE TECHNICAL SERVICE BULLETIN 11.12A on "Genetron" Refrigerants.

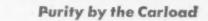
For Further Information...

Products of

GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION 40 Rector Street, New York 6, N. Y.

Offices: Albany * Atlanta * Baltimore * Birmingham * Boston * Bridgeport * Buffalo Charlotte * Chicago * Cleveland * Denver * Detroit * Greenville (Miss.) * Houston Jacksonville * Kalamazoo * Los Angeles * Minneapolis * New York * Philadelphia Pittsburgh * Providence * San Francisco * Seattle * St. Louis * Yakima (Wash.) In Wisconsin: General Chemical Company, Inc., Milwaukze In Canada: The Nichels Chemical Company, Limited * Mentreal * Terente * Vanisustre

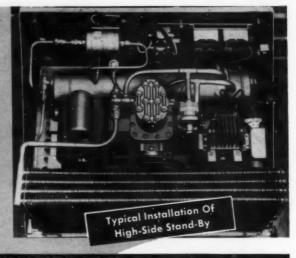


Circle No. 5 on Reader Service Card

and AIR CONDITIONING . MAY, 1954

Out of the laboratory . . . from our vast sources comes







New PACKAGED Systems Simplify TRUCK INSTALLATION



These new Lehigh TWO-COMPRESSOR SYSTEMS, now available through factory trained and fully qualified distributors, take fifty percent of the labor and guess-work out of the installation of truck refrigerating equipment. Not only are they much more compact than older models, but once installed they give much more room for servicing with all parts easily accessible. Controls, too, have been greatly simplified. Each "package" now contains every needed component and accessory for installation. Included are such important items as mounting brackets, wire clips, cord hangers, mounting screws and bolts, etc. Thousands of these fine Lehigh systems are now in use. Basic quality is unchanged. Only the package has been improved - for your greater convenience! We'll be glad to send you data sheets.

Also available: REMOTE TYPE TRUCK UNITS PLATE TYPE SYSTEMS · SINGLE COMPRESSOR SYSTEMS

Write for catalog and name of your nearest distributor



For 2-Compressor System

TWO-COMPRESSOR SYSTEMS

For ON-THE-ROAD and STAND-BY SERVICE A Complete, Ready-To-Install Package



LEHIGH MANUFACTURING COMPANY

Lancaster, Pa.
DIVISION OF LEHIGH FOUNDRIES, INC.

Manufacturers of Malleable and Grey Iron Castings, Refrigerating Equipment, Air Valves, Automatic Vending Machines

No. 1 IMPORTANCE

Regardless of the UNIT You Buy ...

Be Sure it has a CLEANABLE Condenser



Now that almost all leading manufacturers are recognizing the demand for a cleanability feature in their units-you needn't settle for anything less than a CLEANABLE water-cooled condenser. For regardless of water conditions or length of service, you can always count on restoring new-unit efficiency by the simple use of a spiral cleaning tool in these new HM Cleanable models. The tool cleans them mechanically-thoroughly removing ALL the corrosive material that accumulates on the water tube interiors. Remember, too, in all sizes, economical performance is now enhanced by low initial purchase cost, made possible by the huge productive capacity at the new Halstead & Mitchell condenser plant.

Seamless Copper Tubes Brass Headers Machined & Brazed

Capacities -1/3 thru 25 H. P. All Water-cooled, Double tube, Counter-flow Halstead & Mitchell

Wholesalers in Principal Cities—Write for descriptive literature



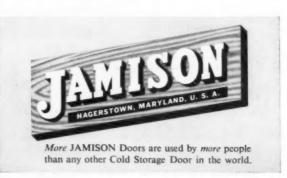


For Applications Down To -20° F. Select JAMISON LO-TEMP Doors for Efficiency and Economy

For any low temperature application where an infitting door will best serve your purpose—down to -20°F.—the perfect door is a JAMISON LOTEMP. It is an efficient infitting door, equipped with super-safe single seals, E-Z Open fasteners

that maintain a tight seal but open with minimum effort with lever handle, and positive action Adjustoflex Hinges—stainless clad or Standard, woodback galvanized face. They work better, look better, stand up longer. For complete information, specifications and dimensions, write for Catalog Section 3, Jamison Cold Storage Door Company, Hagerstown, Maryland.





Circle No. 8 on Reader Service Card MAY, 1954

S ALL TIME CHAMPIONS!





Timely comments of interest to users of "Freon" refrigerants



"FREON" REFRIGERANT NEWS



"Freen" is Du Pont's registers trade-mark for its fluorinate hydrocarbon refrigerants.

E. I. du Pont de Nemours & Co. (Inc.), "Kinetic" Chemicals Division, Wilmington 98, Delaware.



Quality Control of "Freon" Refrigerants

Includes checking moisture content of samples with an infrared spectrophotometer such as that pictured above. Moisture content of "Freon-12," for example, is less than 10 parts of moisture in a million parts of this refrigerant! The "Kinetic" Chemicals Division of the Du Pont Company has been making "Freon" refrigerants for 23 years, and quality controls have always insured the dependable uniformity of every "Freon" refrigerant.



"FREON" REFRIGERANT AD SERIES ... A SERVICE TO ARCHITECTS

Helps Further the Installation of Air Conditioning and Refrigeration Systems

As interest in air conditioning and refrigeration steadily increases, more and more architects are being asked to design installations for a wide variety of structures. As a service to this important, influential group, the Du Pont Company is currently running a series of article-like advertisements, such as the one shown in part above, in the magazine Architectural Record.

These ads are written by authorities

New System of Distributing "Freon" Refrigerants Benefits Wholesalers and Their Customers

Du Pont has announced a new, nationwide system of "Freon" refrigerant distribution from strategically located warehouses direct to wholesalers who supply these refrigerants to contractors, service engineers and others.

The outline map below shows the con-

frigerants to wholesalers, permits better inventory control and enables them to obtain stocks quickly. It supplements their supplies of "Freon-12" dichlorodifuoromethane in 10-, 25-, and 100-pound cylinders; "Freon-11" trichloromonofluoromethane in 200-pound



venient location of 27 regional warehouses now stocking "Freon" refrigerants. Deliveries can be made from these warehouses direct to wholesalers in a matter of hours.

The new, improved delivery service now speeds up shipments of these redrums, and "Freon-22" monochlorodifluoromethane in 9-, 22-, and 125-pound cylinders.

Wholesalers everywhere have welcomed this new delivery system which places them in a better-than-ever position to serve their customers.

on air conditioning and refrigeration and cover subjects of timely interest and value to architects. They include design data, suggestions and recommended practices with respect to the installation of systems. Recent ads have discussed air conditioning for TV studios, existing office buildings, warehouses, residences and stores.

In each advertisement reference is also made to the desirability of choosing equipment operated with a "Freon" fluorinated hydrocarbon refrigerant. Architects are reminded that these refrigerants are safe . . . nonflammable,

Circle No. 10 on Reader Service Card MAY. 1954 • nonexplosive, virtually nontoxic, and contribute to the economical, satisfactory operation of the system over long periods of time.

It has long been recognized that service is important in the use of "Freon" refrigerants. For that reason, we have maintained warehouse stocks throughout the country. Now ... with an improved system of distribution, larger stocks are being carried and these are more readily accessible to wholesalers . . . enabling them to serve their customers better than ever before.

CHARLES WIRTH, Sales Manager

ANOTHER LARKIN TRIUMPH!

THE ALL-NEW LOW-PRICED

LARKIN COMFORT CONDITIONER

5 MODELS-2 TO 10 TONS

Cools or heats • De-humidifies Filters • Circulates Air

Here is Larkin's answer to the ever-increasing demand for year-round comfort conditioners. When you see it . . . when you compare it . . . when you price it . . . then you will understand why we say it is another triumph for Larkin—manufacturer of air-conditioning equipment for nearly 25 years.

See your wholesaler today for complete information about the all-new Larkin Comfort Conditioner. Write us for the name of the one nearest you—or for descriptive literature.



"Originators of the Cross Fin Coil"

LARKON EDULEING.

519 MEMORIAL DRIVE, S.E., ATLANTA, GEORGIA

Ideal for:

STORES

GRILLS

OFFICES

RESTAURANTS

BAKERIES FLORISTS

CLINICS

FEATURES THAT SELL AND SATISFY

- Larkin air-conditioning coil—eight fins per inch, continuous fin, staggered tubes, for highest efficiency and lowest operating cost
- Compact cabinet, all-steel, rust-resistant, beautifully finished with baked-on-enamel
- Fiber-glass insulation
- Pressure-type, centrifugal, dynamically balanced, forward curved fan wheels
- Frictionless, self-aligning bearings completely encased in Neoprene
- Resilient base motors on adjustable mounts
- Two-direction, adjustable discharge grille
- Easily removed, throw-away filters
- Heating coils for use with steam or hot water
- Slotted hanger bars
- · Easily installed, easy to service
- Backed by the engineering skill and manufacturing reputation of Larkin Coils one of America's leading makers of commercial and industrial refrigeration and air-conditioning equipment



"It sparkles like a diamond"

Almost all ice makers accumulate impurities from the water supply and from the air. Deposits of lime, slime and dirt are the result. These contaminants not only ruin operating efficiencies, but cause such common complaints as opaque ice, cube lock, slow freezing, offensive odors and tastes.

Ice Machine Cleaner Powder is the safe, sure way of cleaning automatic cube or flake ice machines. It is packed in individual 8 oz. pliofilm bags. One bag dissolved in the water tray or freezing compartment and allowed to circulate for a few minutes cures the trou-

12

ble. It will not injure the machine or its polished surfaces. It is not harmful from a health standpoint when used as directed.

"Virginia" also distributes two other good remedies for sick cooling towers, "evaps" and condensers. One is Solvex Cleaner Tablets and Grains,* for thoroughly cleaning fouled equipment and reducing high head-pressures in a matter of minutes. The other is Solvex Maintenance Tablets and Grains,* for preventing accumulations which cause the trouble in the first place. Both are as reliable as the name "Virginia" which is back of them.

Ask your wholesaler for these fine products, or write Refrigeration Division, VIRGINIA SMELTING Co., Dept. 64, West Norfolk, Va.

*Manufactured by the CHEMICAL SOLVENT Co., Birmingham, Ala.



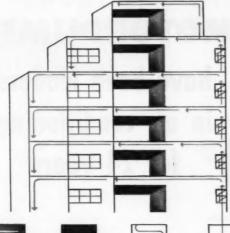
ESOTOO • MINETIC CHEMICAL'S "FREON" REFRIGERANTS
V-METH-L • CAN-O-GAS • PERMAGUM • PRESSTITE TAPE
SOLVEX PRODUCTS • SUNISO REFRIGERATION OILS

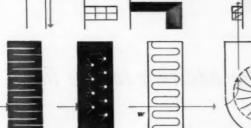
Available in Canada and many other countries

Circle No. 12 on Reader Service Card MAY, 1954 THE MARK OF
EXTRA DEPENDABLE
REFRIGERATION AND
AIR CONDITIONING EQUIPMENT









The red "power spot" on refrigeration or air conditioning equipment means powered by Electro Dynamic, the most dependable motors ever available to industry.

For proof of this extra dependability send the coupon below for your copy of "MOTOR SHOWDOWN", a new candid report on comparative results of motor performance tests* conducted in accordance with A.I.E.E. standards.

*Tests certified by J. Arthur Balmford, Professor of Electrical Engineering at a leading Eastern University.



1 to 250 hp., AC and DC N.E.M.A. standard frames All types of enclosures





ELECTRO DYNAMIC

Division of General Dynamics Corporation 164 Avenue A, Bayonne, New Jersey

and AIR CONDITIONING .



ADDRESS.

COMPANY

Please send me a copy of "MOTOR SHOWDOWN" and the new catalog of Electro Dynamic industrial motors,

Circle No. 13 on Reader Service Card MAY, 1954



9 4 4

Ingersoll-Rand OTORPUMPS

have been leaders in air conditioning for 24 years

and NOW a new addition to the line!



Here's the pumping unit every air conditioning contractor or dealer has been looking for - the new addition to the Ingersoll-Rand Motorpump

A leader in 1930 with the first Motorpump for air conditioning, the line was re-engineered to produce the model of 1944. Now here are the fruits of more years of research and development . . . the new air conditioning Motorpump of 1954 by Ingersoll-Rand.

Investigate the features of this pump NOW, features that will insure you of the best pump and keep your reputation for installing efficient, trouble-free equipment.

- 1-Top hydraulic performance more liquid moved with less power input. 2-Smaller and lighter in weight.
- 3-Mechanical seals-rotating ceramic against stationary "Teeplelite" seal face.
- 4-Positive impeller attachment (key and cap screw) - no screwed-on impellers.

 5-A sure-fire and easy method of rotating
- pump by hand on spring start-up after winter shut-down to loosen seal and ring fits.
- 6-Priced to meet competition,

Get in touch with your nearest Ingersoll-Rand branch office now and start the 1954 air conditioning season off with the best.

11 Broadway, New York 4, N. Y.

Circle No. 14 on Reader Service Card

How do you sell refrigeration to the prospect who says . . .

"I JUST CAN'T AFFORD IT"

Here's how!



Understand his problem. He pays his supply bills daily . . . there just isn't enough money at the end of the month to make lump-sum payments.



Explain to him about the pay-as-you-go Meter-Matic sales plan. He'll see that this way he can afford the re-trigeration he needs.



Installation is simple . . . in just a few minutes you hook up the meter between switch box and refrigerator. If money isn't deposited daily, current to refrigeration is cut off.



You have a happy custom-er—because he pays for his refrigeration the "pain-less" way — with small-change daily. You've made a sale that would be im-possible to make any oth-er way.



METER-MATIC COIN METER

REFRIGERATION SALES PLAN

GET THE COMPLETE STORY

- FULL DETAILS . . . Specifications, prices, etc.
- METER PLAN BROCHURE . . . to help you sell
- . FREE SELF-MAILERS . . . for mailing to prospects

MAIL THIS COUPON NOW!

INTERNATIONAL REGISTER COMPANY

2626 W. Washington Boulevard, Chicago 12, Illinois

nd me Meter-Matic Sales Kit No. 54M. Be sure to include a free supply of 25 self-mailers for mailing to my prospects.

Company.

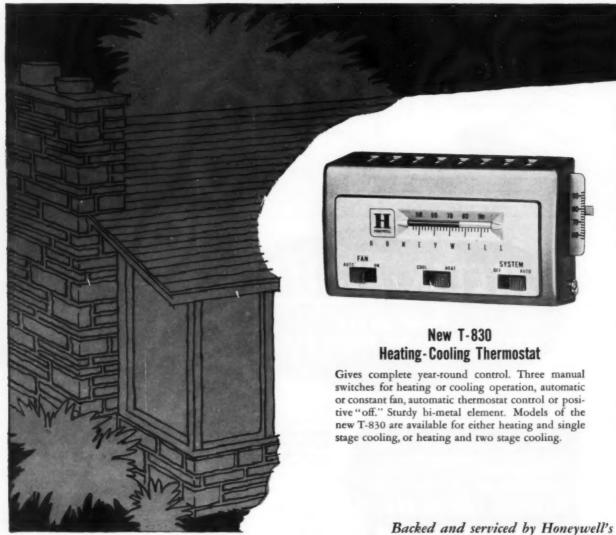
My Name

Address.

State

A new Honeywell year-around

Featuring finger tip heating-cooling



best-by-far nationwide service organization

Circle No. 16 on Reader Service Card

MAY, 1954 . COMMERCIAL REFRIGERATION

experience in heating and air conditioning control

control system for residences

selection at the thermostat location



New W-203 Heating-Cooling Control Panel

Single, pre-assembled unit for year-round control. The new W-203 control panel incorporates terminals for accessories, such as damper motors, cooling tower pumps, solenoid valves, refrigeration pressure controls.

New, More Powerful M-828C Damper Motor

Increased torque. Highly durable, two-position, unidirectional motor. The motor is used to operate dampers for by-pass air conditioning system.

For complete information on heatingcooling thermostats, panels and motors, call your local Honeywell office. Or write to Honeywell, Dept. CR-5-95, Minneapolis 8, Minn.

112 OFFICES ACROSS THE NATION



First in Controls

Circle No. 16 on Reader Service Card

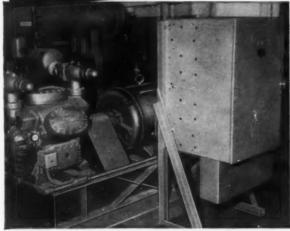
and AIR CONDITIONING

MAY, 1954

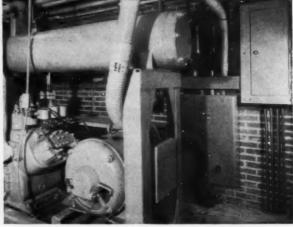
17

Wagner ELECTRIC MOTORS ... the choice of leaders in industry

Start Squirrel-Cage Motors THE MODERN WAY



This 100 hp 3 step increment start motor, with double extended shaft, drives two refrigeration compressors in an Atlanta hospital.



A 40 hp open type high torque motor with an increment starter, drives this compressor in a Houston office building.

with the Wagner Increment Motor and Starter Combination

You benefit when you install a Wagner Increment Motor and Starter "package" because you get a most economical, highly efficient motor and starter combination that limits inrush of motor current to values that are acceptable for the distribution systems of most power companies.

Wagner two-step starter combinations are suitable for most applications. A three-step increment starter is available for applications calling for unusually low inrush of starting current.

Your nearby Wagner engineer will be glad to help you select the combination that meets *your* requirements. Call the nearest of our 32 branch offices, or write us.



Ważner Electric Corporation

WAGNER ELECTRIC CORPORATION
6442 PLYMOUTH AVE. ST. LOUIS 14, MO., U.S.A.

BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

TRANSFORMERS
INDUSTRIAL BRAKES

AUTOMOTIVE BRAKE SYSTEMS— AIR AND HYDRAULIC

Circle No. 17 on Reader Service Card

1954 . COMMERCIAL REFRIGERATION

M54.14



Because selection and installation of the proper cooling tower can "make or break" a comfort cooling job, numerous air conditioning dealers and contractors have sought reliable information from the Marley Company, world's leading producer of water cooling towers. Now, in "PACKAGED COOLING TOWER KNOW-HOW", Marley shares its thirty years of specialized experience with all those who have a stake in the booming air conditioning market.

Many manufacturers and distributors of air conditioning are using this new 32-page book as a "training manual" for dealers and service men. It explains the functions of cooling towers . . . describes the

workings of various types of towers . . . aids in selecting the proper tower for the job . . . gives advice on tower location, piping, electrical wiring . . . complete installation and maintenance instructions that facilitate erection and operation of cooling towers.

Copies are yours for the asking for a limited time.

MAIL THE COUPON TODAY!



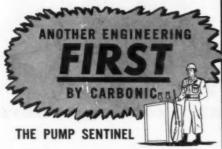
The Marley Company

Kansas City, Missouri

Circle No. 18 on Reader Service Card



omy mood, that's the very time for you to close an easy sale on Carbonic equipment. The savings for the user, with Carbonic, are many and varied. So far do these exclusive, patented beverage dispensing systems surpass in performance all other units of this type . . . that it becomes the simplest thing in the world for you to show how they pay for themselves in short order, how they continue to boost savings and increased profits for the customer, for years to come.



The Pump Sentinel, brand new automatic pump protection device developed by Carbonic engineers and now incorporated in every Carbonic System, overcomes many shortcomings of all similar devices and provides the first truly complete protection against pump damage! It operates regardless of water pressure . . . SAVES THE PUMP when any of the following occur:

- User neglects to open water supply valve.
- · Freeze-up of water cooling coils.
- · Leaking water check valve.
- User opens water supply valve AFTER CO₂ gas has been admitted to system.
- · Liquid level control becomes inoperative.
- · Water supply strainers or filters become

MAIL THIS COUPON TODAY

For literature outlining the opportunity now open to make bigger profits selling Carbonic Dispenser Equipment.

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General Offices: Canfield, Ohio Branch Offices: 1851 Randolph St., Los Angeles, Calif. IN CANADA: GENERAL EQUIPMENT CORP., LTD., TORONTO, ONT.

DISPENSER INC

THEY ALMOST

HAVE TO BUY

WHEN YOU POINT UP

THESE SAVINGS

Instead of paying usual \$1.60

per case of club soda, your customer pays \$.04! Other

costs on soft drinks or mixers correspondingly cut.

Costly, time-consuming bottle

Amazing new speed of serv-

ice saves labor time, avoids

Better quality drinks increase

Compact Carbonic Systems

save space, take less than

S. Patent Nos

2,202,179; 2,331,527; 2,588,677.

Other Pats, Pending.

handling eliminated.

customer "walkout."

business.

bottle storage.

It's the LAW

by Albert Woodruff Gray

Legal problems are an inherent part of operating any business enterprise. If you are beset by them, you'd better talk to your lawyer. This column, which appears periodically in the issues of COMMERCIAL REFRIGERATION AND AIR CONDITIONING, in no way aspires to serve as legal counsel for our readers. It is prepared, however, by a readers. It is prepared, however, by a man well versed in legal practices and opinions, and by presenting digests of actual court cases involving commercial refrigeration and air conditioning dealers and contractors we hope to enable our readers to sidestep some of the legal pitfalls into which they otherwise might unwittingly stumble.

-The Editors

OFFER CREATES NO CONTRACT

THE owners of a market in Arkansas decided to install a refrigerating machine of a particular manufacture and asked a local distributor whom they understood represented this manufacturer, to demonstrate this particular equipment to them.

The distributor was no longer selling the machines of this manufacturer but did not disclose that fact and demonstrated the machine indicated by these purchasers. After the demonstration the purchase contract was placed in front of these buyers for equipment of a different manufacture and they signed without reading the agreement.

Later the purchasers sued to have the agreement cancelled and to recover the down payment that had been made. The Supreme Court of that state held that there had been no contract and in granting to the buyers a recovery of the amount they had already paid and setting aside the agreement is summarized the law governing instances of this character.

"Where one of the parties to a contract is laboring under a material mistake as to a matter of fact and the other party is aware of the mistake and seeks to take advantage of it, knowing that the enforcement of the contract as made will result in an unwarrantable advantage to himself with a corresponding loss to the other party, his conduct is so unconscionable as to justify the interference of a court to rescind the contract or prevent its

performance. One is not permitted to accept a promise which he knows that the other party understands in a different sense from that in which he understands it. In such a case there is no agreement."

Galloway v. Russ, 300 S. W. 390, Arkansas

CONTRACT PROVISION AGAINST IMPLIED WARRANTIES

CONNECTICUT restaurant owner purchased a beer cooling unit under an agreement that provided, "This contract constitutes the entire agreement between the parties and no othr agreement, guarantee or warranty, verbal or written, express or implied, shall limit or qualify this contract."

The purchaser complained of the noise and vibrations of the unit, maintaining that it was not suitable for her use. After a year of effort to condition this unit to function satisfactorily, the buyer notified the seller that she would make no further payments and directed that the unit be removed, which the seller refused to do.

Granting judgment in favor of the seller against the purchaser in a suit subsequently brought by the seller for the unpaid balance, the Connecticut court said,

"In view of this provision of the contract no basis exists for a finding that there was any warranty, express or implied, as to the equipment or its installation. Furthermore the purchaser could not have claimed a rescission. After a refusal of the seller to accept the return of the equipment she was deemed to hold the equipment as a custodian for the seller. If she used the equipment she ceased to be a custodian and could not claim a rescission."

Modern Home Utilities v. Garrity, 186 Atl. 639, Connecticut

CONSIGNOR'S RIGHT IN SALE OF GOODS

R EFRIGERATORS and meat counters were shipped by a manufacturer to a Louisiana retailer under an agreement that the retailer would pay the manufacturer only in the event of the sale of the goods and as they were sold.

The motors and additional equipment necessary for the assembling of com-pleted units were secured by the dealer from a former agent of this manufacturer. Two sales were made and the proceeds paid to this former agent who had furnished and installed the motors. He in turn deducted the amount owed to him for the motors and credited the balance to the account of the retailer.

In his defense to the lawsuit later brought against him for this money by the manufacturer, he contended that the transaction had been merely a sale to him by the retailer and that he was



of cutting production costs!

THESE HANDS are about to preplace a ring of EASY-FLO lowtemperature silver brazing alloy on a machined part preparatory to heating and joining the part to another.

And how does this simple act cut production costs? Well, here's how:

Preplacing EASY-FLO is the key factor in a method of joining metals that reduces brazing to push-button simplicity and assures a steady stream of soundly brazed parts - with easily trained labor doing the whole job.

The reduction in time and labor - plus the savings in heat due to EASY-FLO's low brazing temperature—bring brazing costs down to surprisingly low figures.

Will preplacing cut your production costs?

You can find out very easily. One of our field engineers will look over your metal joining work and give you the answer - entirely without obligation. Just write and say when you'd like him to call.



VISIT OUR BOOTH SEE the preplacement method in action on an actual production

brazing setup. Also a cemented carbide tip brazing demonstration. Examine the many interesting examples of silver brazed parts from many industries. Talk over your metal joining problems with our brazing engineers who will be there for that purpose.

For the full facts

in print, write for a copy of **Bulletin 20**





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Model No. 1919GSK

Model No. 1919GSK 24 Hour Plug-in Up to 1 H.P. Selective Days

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DETAILS IN OUR
FREE BULLETIN!
NO. 354

 Automatic 'ON' and 'OFF' WHEN DESIRED. Adds Comfort and Economy.

Automatic Skip Certain Days Weekly.
 A Must for Professional People.

A complete 24 Hour DAILY REPEAT
Portable-Plug-in Control.
Simple to connect.

So Little Added Cost for so Much Added Comfort. Make Real Boosters for YOUR LINE.

ACT NOW! DISTRIBUTORS

Do Not Depend on Summer Deliveries. No Promises for July and August. Scheduled Shipments Acceptable.

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CLOCK



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REFRIGERATION DEFROST

TORK Solves Your Defrost Problems

Water Defrost • Compressor Shutdown
Hot Gas • Electric Heat or Reverse Cycle •
One or more times a day •
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ALL Commercial or Industrial Types

ACT NOW!—LATEST LITERATURE
Complete in all details



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Model No. 24H61191

Hourly Selective Type
One minute adjustments
1 to 24 times daily
Extremely fine selectivity

TORK CLOCK CO.

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-by return mail.

in no way governed by the terms of the agreement between the retailer and the manufacturer.

The Louisiana court in holding the agent responsible to the manufacturer for the payment of this money, said,

"Where the owner entrusts his merchandise to the possession of a merchant, artisan or trader engaged in the business of selling a like kind of merchandise for the purpose of sale and an innocent third party purchases the merchandise in the usual course of business and pays for it, the true owner of the merchandise cannot recover it from the purchaser because the merchant, artisan or trader fails to pay the money over to it.

"On the other hand, if the purchaser had knowledge of the agreement between the owner and the one offering the goods for sale, or if the circustances are such as to arouse the suspicions of a reasonable man as to the true ownership of the goods, the purchaser takes them at his own peril, and if the merchant, artisan or trader fails to pay the true owner for the goods, the owner may recover them from the purchaser."

C. V. Hill v. Interstate Electric Co., 196 So. 396, Louisiana

FACTS AVAILABLE TO BUYER

A THEATER owner in Missouri purchased a cooling system. The equipment failed to function as he anticipated and when the seller, not having received payment, sued for repossession of the system, the theater owner claimed \$5,000 damages for misrepresentations made by the salesman in the transaction.

According to the purchaser, the salesman represented that the system would reduce the interior by fifteen to twenty degrees below the outside temperature, which it had failed to do.

The purchaser however, had a cooling system already installed in his theater and was as familiar with such equipment as was the salesman himself and knew that no equipment of this character without the aid of ice could effect this temperature reduction.

In a decision in favor of the seller the court said of claims of this character when the facts are equally accessible to buyer and seller,

"The representations outside of a warranty upon which the law authorizes a party to rely in the making of a contract, must be of a fact either then existing or pre-existing and not something to be done in the future nor a mere opinion or inference as to the effect or result of a certain fact or facts then existing or pre-existing.

"These facts must be, too, of a concrete character as distinguished from a truth or principle. Here the facts were known to the purchaser as well as the seller. The purchaser could investigate this as well as the seller. No door of knowledge was closed to him. He need

We said this 7 years ago. It's even more true today!

No matter how well built the air conditioning or refrigeration equipment you install...

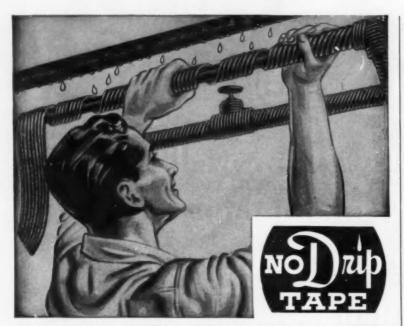
if its performance depends on automatic controls...

it can be no better
than the controls with
which it is equipped.



White-Rodgers electric co. St. Louis 6. Missouri

CONTROLS FOR HEATING, REFRIGIERABION AND AIR CONDICTIONING



STOPS CONDENSATION DRIP

Yes, indeed, it takes care of the vexatious drip and sweating problem connected with cold water pipe installations. NoDrip Tape is pliable, cork-filled, 2" wide. When wound around pipes, it forms a tight fitting, moisture-proof jacket. Holds temperatures steadier, eliminates icing and frosting, prevents rusting, keeps pipes and floors dry.

Just the thing for pipes and suction lines running from refrigerating machines to condensers.





Use on refrigerant lines in air conditioning systems, walk-in freezers, deep freezers and on basement cold water pipes.

CONTRACTORS - Include NoDrip Top

protection in your estimates to stop drip,

preserve pipes and fittings and also for good

appearance. NoDrip is brown in color, but

can be painted any color with cold water

Roll covers about 10 ft. of 1/2" i.d. iron pipe or 13

ft. of 1/2" o.d. copper

EASY TO APPLY

You don't need tools, brads or experience to apply NoDrip Tape. Just wrap it around pipes and press into place with your hands. Anybody can do it. Try a roll on a short section of pipe and compare with uncovered portion.

EFFECTIVE IMMEDIATELY

Follow the easy application directions on the package and you'll be surprised at results. You'll not be bothered with sweating and drip any more.

ORDER THROUGH YOUR SUPPLY HOUSE

Write for Interesting Circular

J. W. MORTELL CO.

Technical Coatings since 1895

533 Burch St.,

Kankakee, III.

MANUFACTURERS and SERVICE ENGINEERS

NoDrip Tape has been used for years on production lines of leading refrigeration equipment manufacturers, Investigate its many advantages. not rely on the mere opinion of the seller as to how the machinery will act for it is but an opinion at best, but having all the facts before him, he could draw a conclusion from them as well as the seller.

"If he was not satisfied with his own opinion and voluntarily chose to adopt the seller's as to the effect of these facts, it was his privilege so to do but he ought not now to complain. The law does not relieve one from a contract because he was mistaken upon open, patent facts."

National Theater Supply Co. v. Rigney, 130 S. W. 2d 258, Missouri.

EITHER-OR DOOR



DOUBLE EXPOSURE (above) shows how the two-way door on Philco's deluxe 1954 refrigerators works. The single door swings either to right or to left, whichever is most convenient at the moment. The "V"-shaped handle, mounted in the center of the door, releases the hinge arrangement on the side which is to be opened and keeps the hinges on the opposite side tightly latched. Both hinged sides cannot be released at the same time.

REMINGTON APPOINTS TWO NEW OUTLETS

The air conditioning division of Remington Corp. has appointed two distributors for its line of window and console room air conditioners. Massachusetts Gas & Electric Light Supply Co. is the new Remington outlet for eastern Massachusetts, all of New Hampshire, and southern Maine.

Richardson-Wayland Electrical Corp. of Roanoke, Va., is the new distributor in western Virginia and southern West Virginia. William A. Moorefield is Richardson's general sales manager and C. W. Camper is the firm's air conditioning specialist.

Arnold Bronstein is Mass. Gas' sales manager and other officers of the company are Charles H. Weinreb, president and treasurer, and Efren Weinreb, vice president.



REFRIGERATI

Not one but two crimps are made in each end of DRYSEAL. This is the final step in manufacturing, that immediately follows a special cleaning and dehydrating operation, which keeps dirt and moisture from entering the tube.

The seal is made in such a way that the diameter of the tube does not change, which permits DRYSEAL to be passed through any opening large enough for the tube itself.

As for bendability—the soft temper of the copper used in DRYSEAL allows you to make the most intricate bends by hand. And its ductility and soft temper make it extremely easy to flare for compression fittings without danger of splitting. Economical tube sizes range from 1/2" to 3/4" O.D.

In addition, the DRYSEAL carton has been attractively designed

for easy identification in stock. It contains one 50-foot coil of DRYSEAL . . . is easier to handle, light weight, economical.



EVER

COPPER AND BRASS INCORPORATED Founded by Paul Revere in 1801 230 Park Avenue, New York 17, N. Y.

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Augeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y. Sales Offices in Principal Cities, Distributors Everywhere.

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WATER SAVERS



HOME or BUSINESS

KENNARD KT Water Savers, "Packaged Economy Line Cooling Towers" are ready for you NOW!

Outstanding features found in KT Water Savers—
Centrifugal type fan, redwood wetted deck, galvanized construction throughout, engineered for long life — OUTDOOR or INDOOR. Sized to meet popular demand, 3, 5, 8, 11 & 16 tons. Catalog KT-2.

Complete line of Cooling Towers-20 thru 75 tons. Cat. CT-1

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4 Reasons Why

KENNARD ENGINEERED KT WATER SAVERS ARE BETTER



1. QUIET



2. SAFE



3. COMPACT



4. RUGGED

a sign of TOUGHNESS



ER TUBE easy to handle!

Webster defines "tough" as, strong but pliant; that which will bend, twist, etc. without breaking.

The Vikings were tough—they had to be to master the grim, cold stormy sea that was their world. The Vikings had a civilization that stands a monument to the will of mankind to live and progress under difficult circumstances.

And today in industry, the word "tough" is perfect in describing VIKING COPPER TUBING—the finest copper tubing ever manufactured for the commercial refrigeration and air conditioning industry. It is symbolic, too, of the men who make Viking copper tubing, resolute in their desire to create a tubing that will do the job better, faster and at lowest cost.



Viking copper tubing is annealed with precision uniformity in electric annealing furnaces. The uniform temper insures speedy, efficient, trouble-free fabrication and strength.



EASY TO BEND AND FLARE

Whatever the application, Viking copper tube makes the work go faster because it is easier to fabricate. Viking refrigeration tubing is soft and pliable - can be formed, flared and expanded quickly without danger of fracturing and splitting.



CLEAN AND DRY

Triple-sealed Viking tube avoids trouble before it starts - remains extremely dry and absolutely free of dirt. The seal is made to pass through any opening large enough for the tube itself.



IKING copper tube co.

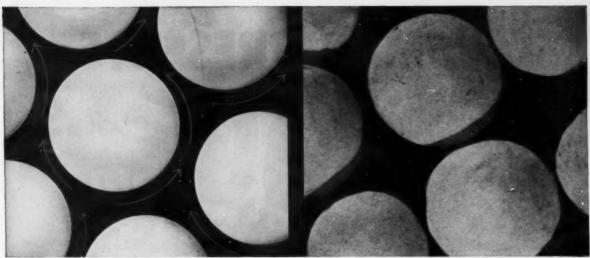
PRECISION DRAWN SEAMLESS COPPER AND ALUMINUM TUBING

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and AIR CONDITIONING . MAY, 1954 Now Research Proves

acid causes

refrigeration system breakdown!



Pelletized spheres distribute flow, eliminate channeling.

Greater surface area traps more sludge and moisture.

AN-DRITE

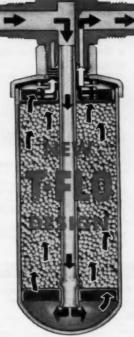
(100% ACTIVATED ALUMINA)

removes acid!

Activated alumina in pellet form makes Ansul's new Andrite the double-duty desiccant. Its thousands of fast drying surfaces dry deeper—pulling moisture content way down. But even more important, Andrite removes acid, cleans up the chemical condition that causes sludge and corrosion—the major cause of refrigeration system breakdowns.

Designed for the revolutionary Ansul T-Flo Drier, Andrite won't break down or dissolve to plug filters or damage compressors. And the drier is easy to install, too. Even replacement of the drier cartridge saves time, because it screws in like a light bulb. And no tools are needed. For fewer call-backs, speedier servicing, change to Ansul. And be sure to give new equipment double protection in acid and moisture removal. Use Ansul T-Flo Driers with Andrite.

For more information or answers to your refrigeration problems write to: Ansul Chemical Company, Refrigeration Division, Dept. D-2, Marinette, Wisconsin.



SCREWS IN LIKE A LIGHT BULB!

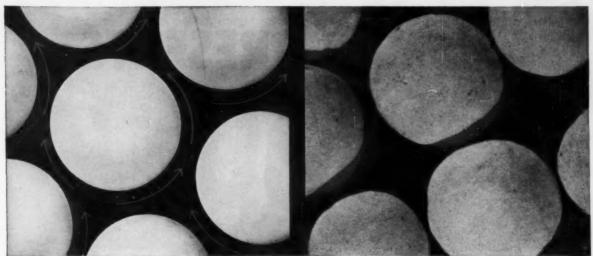
ANSUL

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Now Research Proves

acid causes

refrigeration system breakdown!



Pelletized spheres distribute flow, eliminate channeling.

Greater surface area traps more sludge and moisture.

AN-DRITE

(100% ACTIVATED ALUMINA)

removes acid!

Activated alumina in pellet form makes Ansul's new Andrite the double-duty desiccant. Its thousands of fast drying surfaces dry deeper—pulling moisture content way down. But even more important, Andrite removes acid, cleans up the chemical condition that causes sludge and corrosion—the major cause of refrigeration system breakdowns.

Designed for the revolutionary Ansul T-Flo Drier, Andrite won't break down or dissolve to plug filters or damage compressors. And the drier is easy to install, too. Even replacement of the drier cartridge saves time, because it screws in like a light bulb. And no tools are needed. For fewer call-backs, speedier servicing, change to Ansul. And be sure to give new equipment double protection in acid and moisture removal. Use Ansul T-Flo Driers with Andrite.

For more information or answers to your refrigeration problems write to: Ansul Chemical Company, Refrigeration Division, Dept. D-2, Marinette, Wisconsin.





and AIR CONDITIONING • MAY, 1954

SCOTSMAN PRESENTS...



MAKES 500 LBS. OF CLEAR 100% PURE ICE CUBES DAILY

- Rated Daily Capacity of 500 Lbs. or 9000 Cubes!
- Stainless Steel Storage Bin Stores 400 Lbs.
- Simplified, Dependable, Ice-Making Mechanism!
- Occupies Only 8 Sq. Ft. of Floor Space.
- Designed and Built to Your Specifications!

Scotsman is proud to present this great new addition to America's Most Complete Line of Automatic Ice Machines! The answer to the ever-growing need for on-the-premises ice machines for the large user. It is designed and engineered to the most exacting standards to give years and years of trouble-free service!

X

EXCLUSIVE NEW "CYCLE-MATIC"

CONTROL... The new SC-500 is equipped with the famous "cycle-matic" method of controlling . . . It's maximum efficiency and dependability proved by thousands of other model Super Cubers in operation throughout the world! It's your customer's guarantee of smooth performance, perfect cubes, and trouble-free operation!

The Scotsman franchise is a valuable franchise backed by strong, aggressive national merchandising. WRITE TODAY.

State

CLIP AND MAIL TODAY!

Please send me complete information about a Scotsman Franchise.

Name

Address

SCOTSMAN AUTOMATIC ICE MACHINES AMERICA'S MOST COMPLETE LINE!

SUPER PLANEES

SUPER PLANEES

SUPER PLANEES

AMERICAN GAS MACHINE CO. . Division of Queen Stove Works . Albert Lea, Minn.

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MAY, 1954 . COMMERCIAL REFRIGERATION

Starting.

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Continuous and extensive advertising of ALL Chrysler Airtemp product lines

selling job easier!



"Packaged" Air-Cooled Air Conditionersneeded, no plumbing required. 2, 3 and 5 H.P.

• The specific benefits of Chrysler Airtemp "Packaged" Air Conditioning to businesses and professions which constitute your best market are advertised consistently in 29 trade journals. In addition, exten-sive advertising on other Chrysler Airtemp products is constantly increasing acceptance of the Chrysler Airtemp name on all products which carry it.

For example, in this month of May alone, messages on Chrysler Airtemp Room Air Conditioners will appear in national magazines with a com-bined circulation of 11,720,345. Advertising on Chrysler Airtemp residential air conditioning will reach an additional 8,775,636 people in national magazines-also 300,000 builders, architects and contractors in leading building industry trade journals. Prominent news and business publications will carry the story of Chrysler Airtemp Air Conditioning for buildings to over 1,160,000

In this month, too, as every month, Chrysler Airtemp's popular full-color movie, "It's in the Air," will be shown to thousands of people throughout the country.

The tremendous impact of all this Chrysler Airtemp advertising is an important extra you sell with when you sell Chrysler Airtemp "Packaged" Air Conditioning. But only one of many! Check those additional extras described below. Then return convenient coupon for all of the detailed information you should have on the profitable Chrysler Airtemp Franchise.



more advantages you sell with when you sell Chrysler Airtemp...

- Consumer Confidence—people know the Chrysler Airtemp name—associate it with engineering leadership—have confidence in the products which carry it.
- ★ Lower Installation Cost—super-quiet operation permits use within or very close to areas to be cooled, reducing amount of ductwork required. All units shipped com-pletely factory-assembled and tested.
- Assured Dependability—Chrysler Airtemp pioneered "Packaged" Air Conditioning in 1937, has more units in use today than anybody else. All units are manufactured to exacting standards of precision in a modern, windowless, completely air condi-

tioned factory. Each unit thoroughly inspected and tested before shipment.

- * Advanced Engineering by Chrysler Airtemp offers your customers features that mean more because they do more for them.
- ★ 5-Year Compressor Warranty—covers replacement of compressor, freight and labor.
 ★ Mare Complete Line—9 models meet all requirements.
- ★ More Local Selling Helps—the broadest line of tested and proved local selling helps for dealers.

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heating . air conditioning for homes, business, industry

Airtemp Division, Chrysler Corporation, Dayton 1, Ohio

Airtemp Division of Chrysler Corporation P.O. Box 1037, Dayton 1, Ohio	CR&AC-5-54	
I would like to know more about the Chrysle	er Airtemp Franchise.	
Name		
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YOU'LL FIND THESE ACME PRODUCTS AT AMERICA'S FOREMOST WHOLESALERS



Acme oil separators

Six models. 1/4 to 10 h.p. capacity. Maximum separation because of low gas velocity and special filter cartridges.



Acme heat exchangers

Newly designed. Capacities ranging from 3 to 200 tons. Extended bar type fin surface with a gas to liquid side ratio of 13 to 1. Extremely low pressure drop.



and tube condensers

Capacities ranging from ½ to 30 tons. Compact size, extended tube surface, easily cleanable, cast iron water heads "through bolted" to the tube sheet, and sheets welded to the condenser shell. Preferred by better equipment manufacturers the world over.



Acme shell and coil condensers

Inexpensive, efficient. Capacities from ½ to 5 tons. Compact, sturdily constructed, chemically cleanable. All units have integral fin copper tubing. Acme builds shell and coil condensers for the leading packaged Air Conditioner manufacturers.

Ask your wholesaler about immediate delivery of Acme's new Flow-Cold Cooling Towers,



ACME INDUSTRIES, INC.

JACKSON, MICHIGAN

Mfgs. of a complete line of Air Conditioning and Refrigeration Equipment



Evaporative Condensers Cooling Towers Floor-type Unit Coolers



Direct Expansion (Dry-Ex) and Flooded Liquid Chillers Heat Exchangers, Oil Separators



Shell and Tube, Shell and Coil Condensers Receivers, Pipe Coils



Packaged Liquid Chillers to 225 tons



Flow-Temp Heat Pumps Flow-Cold Liquid



Remote Room Conditioner

Continuously serving the refrigeration and air conditioning industry since 1919

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MAY, 1954 . COMMERCIAL REFRIGERATION

When he's LINED UP but not SIGNED UP ...





Be ready to sign him up with COMMERCIAL CREDIT PLAN FINANCING

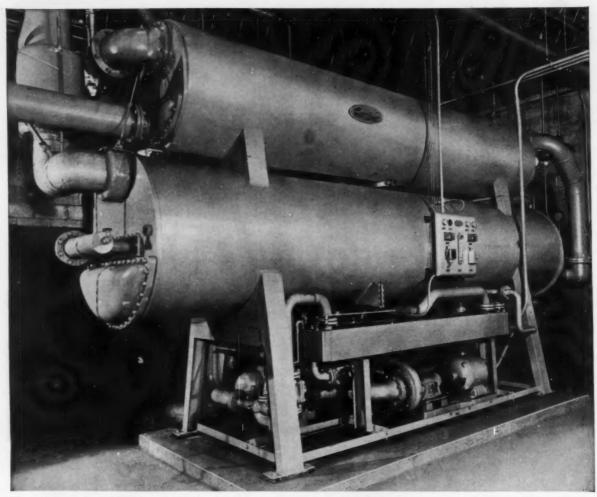
OST of your prospects need their working capital and usual lines of credit for current operations. To make sure they buy now . . . and from YOU . . . include COMMERCIAL CREDIT PLAN financing in your recommendations. More than 300 offices to serve you nationally. When can we tell you our story? Phone our office in your city or write or wire COMMERCIAL CREDIT CORP., 14 Light St., Baltimore 2, Maryland.

COMMERCIAL CREDIT CORPORATION

A service offered through subsidiaries of Commercial Credit Company, Baltimore . . . Capital and Surplus over \$145,000,000 ... offices in principal cities of the United States and Canada.



Circle No. 31 on Reader Service Card



This 350-ton Carrier Absorption Machine is installed at the Joseph Horne Co. Suburban Store in Brentwood Borough, Pennsylvania.

Carrier Absorption Refrigerating Machine uses heat to cut cooling costs

—and AnacondA Cupro Nickel Tubes are again called on for economical quality performance in industry

Until recently, plant and building engineers have been hung on the horns of a cooling dilemma; how to use low pressure steam—frequently exhausted



Rolling-in ANACONDA Cupro Nickel Tubes in absorber for new Carrier Absorption Machine.

as waste—for chilling water for air conditioning and process cooling. No economical way seemed to exist to harness this heat as a work horse for cooling.

Carrier Corporation, leading manufacturer of air conditioning and refrigerating equipment, found the solution in absorption refrigeration. In 1942, they installed the first pilot plant at the Carrier laboratory using water as a refrigerant and lithium bromide as the absorbent. Since then, a growing number of these large capacity units have been put into operation. They have few moving parts, are practically vibration-free, weigh less per rated ton, and adjust automatically to load.

Carrier selected ANACONDA Cupro Nickel Tubes for use in these machines

Circle No. 32 on Reader Service Card MAY, 1954 because of their excellent service record for trouble-free performance under all operating conditions.

What are your condenser and heat exchanger problems? In selecting the proper tube alloy, the experience of our Technical Department is freely available to you. Use it as a short cut to the right solution. Write to The American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

FOR EFFICIENT HEAT TRANSFER

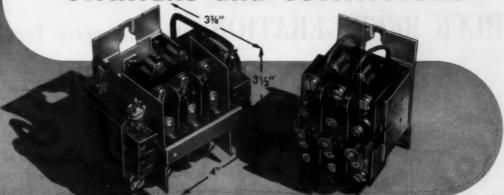
Anacond A°

HEAT EXCHANGER TUBES

COMMERCIAL REFRIGERATION

Designed Specifically for the AIR CONDITIONING - REFRIGERATION Industry

ARROW · HART Magnetic STARTERS and CONTACTORS



These controls are specifically engineered to provide the ultimate in performance, dependability and protection for refrigeration and air conditioning compressor motors. Result of many months' research, they were developed in close coopera-

These Starters and Contactors utilize an all-new, designed-for-the-purpose version of the Double E Magnet Operating Mechanism. STRAIGHT-THRU WIRING . . . another exclusive, built in feature. Eliminates looping, U-bending saves space and installation time. More room provided for wiring pilot devices to and from the starter.

Features:

61/4"

A-H TYPE "QT" QUICK TRIP HEATERS . . . provide special tripping characteristics required by refrigeration and air conditioning compressor motors. Design of the A-H Quick Trip Heater gives a quick trip at locked rotor and eliminates nuisance tripping at normal heavy running compressor loads. Exclusive A-H design fits standard overload relays; no special overload is required.

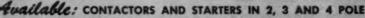
SLOTTED MOUNTING HOLES . . . easy removal or replacement for installation and maintenance. Simply loosen screws, lift control up

tioning and Refrigeration Industries.

tion with the leading engineers of the Air Condi-

SMALLER SIZE . . . than any other controls of comparable rating. Saves valuable space.

IGED CONTACTS . . . of the latest and best ericls withstand high inrush loads of herically sealed meters, assure dependable ration, long life.



WRITE NOW FOR COMPLETE INFORMATION . . . Use the attached coupon to send for yefree copy of A-H Folder No. MS-AC-79. Includes full dimensional and engineering da



ARROW-HART

INDUSTRIAL CONTROL DIVISION

103 Hawthorn St., Hartford 6, Conn. 103 Hawtharn St., Hartford 6, Conn.
Offices, Sales Engineers and Warehouses in: Atlanta, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Houston, Indianapolis, Kansas City Mo., Los Angeles, Milwaukee, Mineapolis, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco. In Canada: Arrow-Heat & Hegeman (Canada) Ltd., Mt. Dennis, Toronto. In England: Arrow Electric Switches, Ltd., Ealing, London W 5.

INDUSTRIAL CONTROL DIVISION

THE ARROW-HART & HEGEMAN ELECTRIC CO. 103 HAWTHORN STREET, HARTFORD 6, CONN.

Please send my free copy of Arrow-Hart Folder No. MS-AC-79. Also interested in data on...

POSITION

COMPANY CO. ADDRESS....

ZONE STATE CRBAC RE





Which method of

TRUCK REFRIGERATION fits your needs best?



There is no one method of truck refrigeration that is best for all purposes. The way you use one truck may call for a completely automatic refrigeration system while another truck might be refrigerated most economically by the hold-over method. Kold-Hold can solve your problems many ways. They will give you the right combination for your needs from such highsides as Kold-Trux Units, mounted compressors, or make-and-break assemblies, coupled to such lowsides as "Hold-Over" Plates, Thin Plates, Serpentine Quick-Action Plates or Blowers.

yours for the asking Kold-Hold Engineers will be happy to analyze your refrigeration problems and make recommendations without obligating you in any way. Simply check the form below and attach it to your letterhead.

VALLEY FARM DAIRY COMPANY maintain below freezing temperatures using a Kold-Trux "Mobilmatic" Unit with "Hold-Over" type plates. Power for the Kold-Trux Unit is derived from a live trailer axle so system operates whenever truck is in motion.

MIB-CENTRAL FISH COMPANY keeps 28 trucks on the road Monday through Thursday. All are refrigerated with Kold-Hold "Hold-Over" Plates as they have found this method most successful and economical in their type of operation. Body by Batavia.

HOLLANDER SEVERAGE CO. use a mounted compressor and four "Hold-Over" plates in providing a truck temperature of 38 degrees. Under normal use the body does not lose over 4 degrees a day. The body is built by the Ovens Body Company.

MEADORS WHOLESALE FLORIST refrigerates this truck with a Kold-Trux Mobilmatic Unit and blower. This system maintains thermostatically controlled temperatures in the truck body to keep their flowers fresh and saleable.

Please check your busines	s classification:
---------------------------	-------------------

☐ Meat ☐ Milk ☐ Ice Cream

☐ Frozen Food

☐ Wholesale

☐ Retail

Over-the-Road

Which do you prefer?

☐ Mobilmatic

☐ Hold-Over

Look to Kold-Hold for the latest developments in Truck Refrigeration



division

TRANTER MANUFACTURING, inc.,

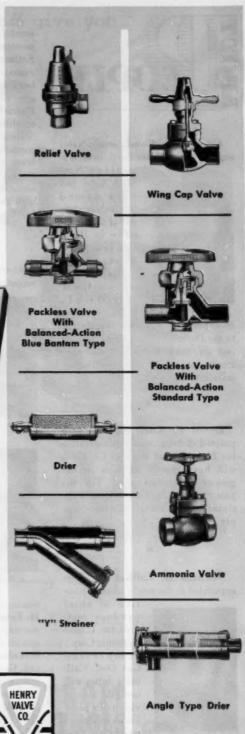
503 E. Hazel St., Lansing 4, Michigan

Circle No. 34 on Reader Service Card

MAY, 1954

COMMERCIAL REFRIGERATION

The Industry's confidence in Henry Products is reflected by the largest demand in the Company's production history over the past 40 years



Valves, Driers and Strainers

Henry Valve Co.

Melrose Park, Illinois (Chicago Suburb) Cable: Hevalco, Melrose Park, Illinois



Valves - Driers - Strainers - Control Devices and Accessories for Refrigeration - Air Conditioning and Industrial Applications



Gordon V. Bond, senior sales engineer for Carrier Corp. in metro-



politan New York City, has been named branch manager of the firm's office in Houston, Tex. Bond, with Carrier for nearly 20 years, replaces Oscar H. Mehl, former Houston

manager who has been transferred to the Dallas district Office. For the last six years Bond has sold contracts for major air conditioning installations.

David F. Korb has been appointed district sales representative for International Register Co. Korb will have charge of sales in the greater Cincinnati area. For the past three years, he has been associated with General Electric Supply Co.

Norman H. Callner has been appointed to the newly created posi-



tion of chief product engineer for Liquid Carbonic Corp's Compressed Gas Div. Callner's duties will include supervision of a plant improvement program, de-

velopment work, and construction of new plants. Callner formerly had been responsible for the design, layout, purchasing, construction and initial operation of Liquid dry ice plants in Belleville, N. J., Philadelphia; Maracaibo, Caracas, Venezuela; and Montevideo, Uraguay.

Appointment of two regional air conditioning managers has been announced by Servel, Inc. Nils D. Sellman, former air conditioning manager of the southern region has been named air conditioning manager of the eastern region, and Patrick B. Krapfl, former air conditioning zone manager succeeds Sellman as southern regional air conditioning manager. Sellman has been with Servel air conditioning since 1947, starting as service representative. Krapfl started in 1953 with Servel as zone sales manager for Louisiana and Arkansas.

Airtemp Div., Chrysler Corp. has recently appointed three men to



R. A. Gonzalez

top sales and engineering positions. R. A. Gonzalez has been named to the staff of J. F. Knoff, vice president in charge of sales, to handle special air condi-



J. C. Davidson



R. H. Friedel

tioning engineering assignments; R. H. Friedel has been appointed staff assistant to Knoff, to take charge of special sales assignments; and J. C. Davidson has been named to succed Gonzalez as manager of Airtemp's applications engineering department. Before joining Airtemp in 1935, Gonzalez was with York Corp. in various engineering capacities in Houston, Atlanta and York, Pa. Friedel has been in charge of Airtemp's residential air conditioning sales and promotion programs for the past year. Davidson, who joined the firm in 1947, has been assistant manager of the applications engineering department for the past four years.

Andrew F. Ward has been appointed staff assistant to M. M.



Lawler, vice president of air conditioning and refrigeration, Worthington Corp. Prior to joining Worthington, Ward was general sales manager of Williams

Div., Eureka Williams Corp. and from 1940 to 1951 he served in various sales capacities with Airtemp Div., Chrysler Corp. He will have headquarters in Worthington's Harrison, N. J. offices.

Harvard K. Hecker has been elected vice president in charge of engineering for Curtis Mfg. Co. Hecker has been with Curtis since 1944 as product design engineer.

C. L. Peterson has been named divisional vice president and O. B. Wilson has been named general sales manager for the Brown Instruments Div., Minneapolis-Honeywell Regulator Co. Peterson, general sales manager of the division since 1952, will devote most of his time to sales policy matters and long range planning. He will also assist H. F. Dever, president of the division, in carrying out managerial duties. Wilson, industrial instruments sales manager since 1953 will assume active administration of the entire divisional sales department.

Frank Gall has been appointed sales promotion manager for Bell



& Gossett Co.
Gall started with the company in 1938 in the engineering department and since 1945 has been connected with sales. His new duties include handling

the educational program of Bell & Gossett, and he will be head-master

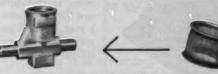
DETROIT SOLENOID VALVES give you

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against moisture, dirt, leakage and noise!

No. 683 Solenoid Valve With Built-In Strainer In All Models

- Capacities to 5.1 Tons Freon-12.
- Plastic-imbedded waterproof coil.
- · Quiet operation—no A.C. hum.
- Rugged forged brass body.
- · Connections available for flare, sweat or pipe thread applications.
- Sturdy mounting boss.



forged brass body available with flare (%" S.A.E. for %" x %" ne nut) or sweat (%" or ½" 0.D.)

Other Detroit Solenoids for Capacities To 50 Tons F-12







DETROIT



TRUMBULL . DETROIT 8, MICHIGAN

. Canadian Representatives in Montreal, Toronto, Winnipeg-Railway and Engineering Specialties, Ltd.

AUTOMATIC CONTROLS for REFRIGERATION

DOMESTIC HEATING . AVIATION . TRANSPORTATION . HOME APPLIANCES . INDUSTRIAL USES AIR CONDITIONING

Serving home and industry

AMERICAN STANDARD . AMERICAN BLOWER . CHURCH SEATS & WALL TILE . DETROIT CONTROLS . NEWANEE BOILERS . ROSS EXCHANGERS . SUNBEAM AIR CONDITIONERS

Circle No. 36 on Reader Service Card

and AIR CONDITIONING . MAY, 1954

at the B&G Little Red Scdoolhouse, a modern school for teaching the latest in heating and cooling design.

Rob't R. Slater has been appointed factory sales representative for the commercial and domestic lines of refrigeration equipment by Jordon Refrigerator Co. Slater, engaged in engineering and sales work for more than 20 years, will cover the states of Washington and Oregon.

Two major shifts in personnel of the home office have been announced by McCray Refrigerator Co., Inc. Walter G. Schreiber has been named general service manager and Don L. Taft, former general service manager has been transferred to the engineering department as assistant chief engineer. Schreiber has been district manager for the southeastern district for the past several years. In his new assignment he will coordinate activities of field service and office service personnel.

W. H. Lassiter Sales Co., representative in Richmond, Va., for Remington Corp. room air conditioners, has appointed Allen N. McCarty as an associate. Before joining the Lassiter organization, McCarty was vice president and general manager of DuVal Distributing Corp., Richmond appliance distributor.

Paul M. Hooven and William H. Grant have been named to head the two new marketing regions recently formed by General Electric Co.'s Air Conditioning Div. Hooven will be located in Atlanta, head-quarters for the southeastern region,





P. M. Hooven

W. H. Grant

while Grant will be in Cleveland, headquarters of the east-central region. Hooven has been with G-E since 1938 and has served the air conditioning division as sales representative to government agencies and as home heating and cooling sales representative in Maryland and Virginia. Grant, with G-E about a year, has held positions in finance management companies and in air conditioning establishments.

Farr Co. of Los Angeles, manufacturer of air filters and air filtration equipment, has appointed Harold M. Robson as central division sales manager. He will supervise representative sales from Farr's central division office in Chicago.

Howard Refrigerator Co., Inc. has appointed 5 new sales representatives. Rudy Peters will cover Ohio, West Virginia, Michigan and western Pennsylvania. John Cheek has the North Carolina-South Caro-

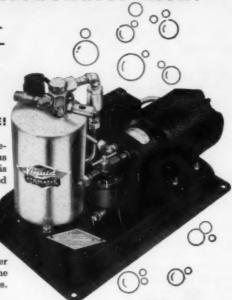
THE LIQUID ATOMATIC CARBONATOR... built by Carbonator men!

SIMPLE TO INSTALL— EASY TO SERVICE—

Produces Highly Carbonated Water under peak load conditions.

CAPACITY TO SPARE!

Carbonators are not a sideline with us. The famous LIQUID ATOMATIC is designed and manufactured by the world's largest producer of machinery for the carbonated beverage-bottler. It is assembled and tested in the same factory and under the same supervision as the larger bottlers' machines.



PROFITABLE, SALES-SERVICE FRANCHISES OPEN NOW



It is easy to sell—Ideal for Fountains, Restaurants, Drive-Ins and Bars. Write to:



THE LIQUID CARBONIC CORPORATION

3100 SOUTH KEDZIE AVENUE - CHICAGO 23, ILLINOIS

Circle No. 37 on Reader Service Card



* Original Equipment
Manufacturer

We would like to share our facilities and knowledge with you. If you're trying to fit a standard motor to a custom job — if you want special characteristics in your motors — THEN YOU WANT PEERLESS ELECTRIC. It's like having your own motor department.

Peerless engineers work with your engineers to give your motors the torque, speeds and other electrical and mechanical qualities that you require. Then, because of our size, which gives us a great deal of flexibility, we can make minor changes as required without fuss or bother.

To get started, just pick up the phone and call . . . ask for me if you wish. I'll see that you talk to the specialist who can help you most. You can have custom motors at a competitive price. We build them — PEERLESS GOLD SEAL MOTORS . . . the motors designed for the products they power.





THE PEERLESS ELECTRIC COMPANY

WEST MARKET ST. . WARREN, OHIO

MOTORS

FANS

BLOWERS

lina-Georgia territory, Don Hall will operate in Florida, and C. J. Kleyla's territory includes Nebraska, Iowa, South Dakota and Minnesota. Thorington & Bailey will be the sales representatives covering Maryland, the District of Columbia, Virginia and eastern Pennsylvania.

Several personnel changes in regional sales offices have been announced by Airtemp Div., Chrysler Corp. Dean E. Parke has been named to succeed A. J. Schiffman as sales mananger of the Chicago sales region, W. E. Edwards has been appointed to succeed S. A. Anderson, Jr., as manager of the Atlanta regional sales office, and E. O. Butler has been named regional manager for the Washington, D. C. sales region. Butler succeeds Earl Palmer who has joined Airtemp's merchandising staff at Dayton, Ohio. Parke has been district manager in the Chicago sales re-

gion since 1948. Edwards, who joined Airtemp in 1953, has been a field engineer in the Atlanta region, and Butler joined the firm as a district manager in 1952. Schiffman has been elevated to an administrative post at Dayton, and Anderson has moved to the Dayton headquarters to direct the newlyformed southern sales region.

Two promotions of plant management personnel have been announced by Mueller Climatrol Div., Worthington Corp. Carl Quick, former head of plant personnel, has been named director of industrial relations and Bob Johnston has been named production manager.





Quick, who started with the firm over 17 years ago as a shipping foreman, has worked in various departments of the company, including sales, service and plant personnel. Johnston joined Mueller over four years ago as a production engineer. He was previously an aircraft tool engineer and supervisor.

Douglas C. Albright has joined Coleman Co., Inc., as works manager. He will direct and coordinate all phases of industrial engineering, production engineering, manufacturing and quality control in the Wichita factories of the company.

Ned P. Kimberly has been named district sales manager of the Cleveland area for the Fiber Glass Div. of Libbey-Owens-Ford Glass Co. Kimberly had worked as a sales representative in the Cleveland district since February 1953 when he completed his sales training at LOF's Parkersburg, W. Va.



100% Fail Safe

HERE'S big news! TPT defrost-it actually "thinks" for itself in assuring positive defrost cycles. Completely flexible; 1 to 8 defrost cycles per day. Can be installed to terminate defrost cycle at any pressure or any temperature. Once set, defrost is completely automatic. Length of on hot gas or reverse cycle electric heat or compressor shut down defrosting.

defrost is self-adjusting for varying loads and atmospheric conditions

Saves worry about costly food spoilage . . . ends call-backs for re-setting . . . makes any low temperature or normal refrigeration system you sell perform better! Write Dept;1688 for more data.

TWO MODELS: TPT-303 (Hot Gas) . TPT-305 (Electric Heat)

Only Paragon TPT "de-frost-it" gives you all these great features

- AUTOMATIC DEFROSTING Time dial starts defrost cycle; preset rise in Pressure or Temperature terminates defrost cycle.
- 100% FAIL-SAFE PROTECTION Exclusive! 45-minute termination dial setting:
 - Protects against low ambient, gas shortage and low pressure.
 - Protects against failure of Pressure/ Temperature cut-in switch, or im-proper defrost termination setting.
- Immediate transfer from defrost to re-frigeration if Pressure/Temperature are too high at start of defrost cycle. sure/Temperature terminated if starts, or any time during defrost cycle.
- REMOTE CONTROL install the TPT in any convenient location and connect the Pressure/Temperature cut-in switch with a single pair of wires.
- HEAVY-DUTY Telechron Motor-long-life, industrial type.
- · AUTOMATICALLY REDUCES COMPRESSOR DOWN TIME.
 - gutter on side and bottom.
 - ✓ Defrost cycle may be manually started at any time with automatic termination.

WISCONSIN

factory. In his new position, Kimberly will supervise the sales of fiber glass super-fine insulation and textiles to the Cleveland industrial market.

Carl E. Corbin has been appointed district sales representative



for Koch Refrigerators, Inc. Corbin will represent Koch in the states of Minnesota, Iowa, Nebraska, and Colorado. Corbin's background includes 32 years in the

commercial refrigerator business. Before selling his interest in Viking Refrigerators in 1952, he was vice-president and sales manager of Viking, president of Viking Sales Corp., and president of Equipment Finance Co. He also operates Corbin Sales Agency in Kansas City, representing manufacturers of related refrigeration products.

Thomas L. Arnold has been appointed sales manager of the



Heating Div. of Fedders-Quigan Corp. Arnold previously served as sales manager of the heating division for Bush Mfg. Co. and as general manager of Vulcan Radia-

tor Co. In his new capacity, Arnold will head up the sales of convectors, unit heaters and wall fin and baseboard radiators.

Julian F. Warren has been named director of advertising and sales promotion and Leland C. Ginn has been advanced to merchandise manager for Coleman Co., Inc. Warren was formerly merchandise manager and Ginn recently joined the company as assistant to the sales manager of the company's



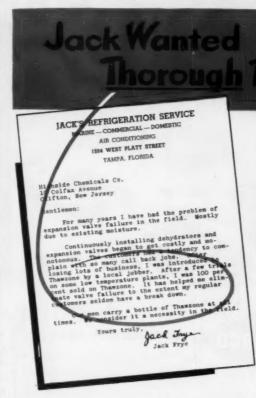


L. C. Ginn

J. F. Warren

heating and air conditioning division. Before joining Coleman, Warren was sales manager and advertising manager of Delco Appliance Div., General Motors Corp. Ginn has been sales manager for the heating and air conditioning department for Radio City Distributing Co., Dallas, Tex.

James H. Shaw has been appointed director of laboratory facilities for Carrier Corp. He will assume direction of certain major Continued on page 136



THAWZONE PROVED TO HAVE THE ANSWER

Jack Frye is one of many refrigeration servicemen who find it pays to be thorough in cleaning up a moisture condition.

Thawzone goes to the heart of the problem: It reaches ALL the moisture and it DE-STROYS both moisture and acids.

Thawzone mixes intimately with the refrigerant and travels with it to all locations where moisture can accumulate. Moisture which may adhere to casting pores, tubing walls or become trapped in the expansion valve or receiver can be destroyed by Thawzone.

THERE IS NOTHING LIKE THAWZONE

- 1. Drying action not "smothered" by oil.
- 2. Actually destroys moisture.
- Neutralizes the acids formed by constant breakdown of oil.
- 4. Cannot cause pressure drop.
- 5. Costs only about 8 cents per lb. of refrigerant.
- 6. For all "Freon" or methyl units.
- Only ½ oz. (1 teaspoonful) per pound of refrigerant required.

Thawzone is available at your wholesaler, in bottles of 1 oz., 4 oz., and one pint. Highside Chemicals Co., Clifton, N. J.

THAWZONE®

The Only Product That Destroys Water ... and Reaches All of it





You Don't Have To Wait Long For Results

Circle No. 40 on Reader Service Card



Florvector® Baseboard Heating



Convector-Radiator



Horizontal Unit Heate



Down Blow Unit Heater

UNARCO

year 'round weather conditioning

World's finest heating and cooling products in a complete range of types and sizes



Quality engineered

Dependable performance <

UNARCO

UNARCO

Priced to sel

UNARCO

Eight manufacturing plants

UNARCO

31 sales offices



Get the facts before you buy



self-contained highboy

2, 3, 5, 7%, 10 and 15 ton cooling capacities.

Heating capacities up to 450,000 BTU per hour.

All UNARCO Products are available in Canada.

UNION ASBESTOS AND RUBBER COMPANY
332 SOUTH MICHIGAN BLVD. • CHICAGO 4 • WEBSTER 9-5444



Wall Radiation



Furnace Air Conditioner



Mobile Air Conditioner



AEC Air Conditioner



CHASE refrigeration tube is easy to handle!

It's soft ... easily bent ... quickly installed ... that's just part of the story on this bright annealed, dehydrated refrigeration tube.

And—Chase Copper Refrigeration Tube ends are crimp-sealed at the same diameter as the tube itself to get through small openings. This insures clean, dry, oxide-free tube when final connections are made!

Chase Copper Refrigeration Tube-coiled in flat double layerscomes packaged in individual boxes and master cartons. Order it ... together with Chase Solder-Joint Fittings.

Circle No. 42 on Reader Service Card

and AIR CONDITIONING . MAY, 1954





A-B Bulletin 709 Solenoid Starter

Size 1 Starter with cover removed. See how simple it is! The white interiors of Allen-Bradley enclosed apparatus make installation easy in dark places.



Consists of Bulletin 709 Solenoid Starter, Bulletin 836 high pressure cutout, Bulletin 837 thermostat with adjustable knob, and Bulletin 600 manual switch, for fan operation.



Why are Allen-Bradley starters so popular for refrigeration and air-conditioning service? . . . because experience has proven them to be trouble free. Only ONE moving part. No pivots, pins, or bearings to corrode or stick . . . no jumpers to break. You install them . . . and forget them!

No contact maintenance . . . Allen-Bradley silver alloy contacts never need cleaning, filing, or dressing. They are always in perfect operating condition.

Dependable overload relays . . . Allen-Bradley "solder pot" relays are accurate and always dependable . . . even after long service.

The Allen-Bradley trademark stands for "Quality" in electric motor control.

Allen-Bradley Co., 1340 S. Second St., Milwaukee 4, Wis.

ALLEN-BRADLEY SOLENOID MOTOR CONTROLS

Circle No. 43 on Reader Service Card
MAY, 1954 • COMMERCIAL REFRIGERATION



. . . customers lost their patience, the store manager nearly lost his mind—and the people who installed the air conditioning system nearly lost the good will of the store.

Here's what happened: 'The store's "specs" did not call for duct liner. The sheet metal contractor called this oversight to the store's attention and recommended Ultralite glass fiber Duct Liner. But the store felt that the additional cost, while small, was not necessary.

Came the Grand Opening of the modernized store—with the results pictured above. Of course, the contractor received an urgent call-back. He quickly solved the noise problem with Ultralite Duct Liner. A happy ending—except that it cost the store several times as much as if they had originally lined the ducts with Ultralite!

Moral: Urge every customer not to be pennywise and pound foolish about duct liner. See that Ultralite Duct Liner is in all your air conditoning specs. From a cost standpoint, Ultralite is just a small portion of the total cost—but it can make all the difference between an enthusiastic customer and a disgruntled one. That's why many contractors put Ultralite Duct Liner in every job—even those where duct liner is not specified.

Ultralite is the only insulation made of long-strong glass fibers. Easy to install, pleasant to handle. Ultralite Duct Insulation (for thermal protection) and Ultralite Duct Liner are stocked locally in 72 cities. Your nearby distributor is listed in the Yellow Pages under "Gustin-Bacon" or "Ultralite."





GUSTIN-BACON MANUFACTURING CO.

260 W. 10TH ST., KANSAS CITY, MO.

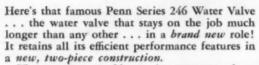
New York • Chicago • Philadelphia • San Francisco • Los Angeles • Houston • Tulsa • Detroit • St. Louis

Circle No. 44 on Reader Service Card

for Hermetic Compressors

new

two-piece WATER VALVE



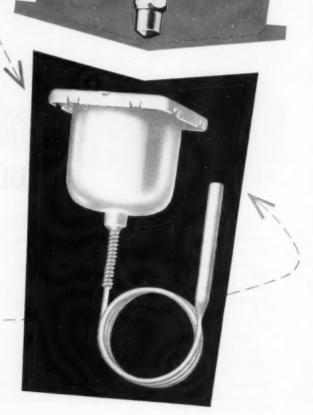
The growing use of hermetic compressors from 1½ to 5 hp. for water-cooled air conditioning created a water valve installation problem. To solve this, Penn came up with the Series 246 two-piece water valve. Now... more and more manufacturers are using the Penn water valve bellows and capillary on each unit. The pressure connector is sweated into the hermetic compressor. Then, in the field, if the equipment is city water cooled, the Penn valve body assembly is required to complete the job. Available in ¾", ½" and ¾" sizes.

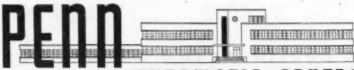
Remember... your best buy in water valves is

Remember... your best buy in water valves is Penn. Ask your wholesaler or write Penn Controls, Inc., Goshen, Indiana. Export Division: 13 E. 40th Street, New York 16, N. Y., U.S.A. In Canada: Penn Controls Limited, Toronto, Ontario.

- SAVES TIME . . . MONEY

Penn two-piece water valve has internal stop in power element. This feature prevents possible damage to bellows, makes assembly to valve body extremely easy and permits installation or replacement of water valve body without cutting into the refrigerant system.





HUIDMHIIL LOMINGLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, GAS APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES
Circle No. 45 on Reader Service Card



FOOD PRESERVATION WITHOUT REFRIGERATION has been accomplished in experiments undertaken at the General Electric Research Laboratory. In these tests, bread, meat, and other foods have been preserved for periods as long as a year as a result of bombardment with 800,000-volt electrons, or cathode rays. The rays kill molds and other organisms which normally cause such foods to spoil. Researchers have emphasized, however, that this work is purely experimental, and that it is far too early to predict any possible commercial applications.

COOLER CARGOES in mechanically refrigerated trucks can be obtained by providing greater use circulation of the cold air, according to reports on two tests made by the Marketing and Facilities Branch of the Production and Marketing Administration, USDA. In each test two truckloads of poultry were refrigerated. One truck in each test was loaded in the conventional manner while the other, loaded to promote better air circulation at the truck floor, had a return air duct attached to its refrigeration unit. Cold air circulated over, back of, and under the load to pick up heat. The total average difference of the modified loads and return air ducts in temperature was about 4° F under that of the conventionally loaded trucks. The report further indicated that even lower temperatures would be available if floor racks were installed to permit better circulation of air.

TO MEET AN ANTICIPATED INCREASE in demand for freezer storage space as a result of the frozen food industry's estimate of a record production of 4.5 billion pounds of frozen foods in 1954, the refrigerated warehouse industry will have added over 7 million cubic feet of such space by the end of this year, according to R. M. Connor, president of the National Association of Refrigerated Warehouses. The industry's total amount of refrigerated storage space, he reports, is approaching 450 million cubic feet, of which well over half is freezer storage space.

AUTOMATICALLY CONTROLLED HEATING SYSTEMS are included in more than one out of every four homes in the nation, according to a survey made by Minneapolis-Honeywell Regulator Co. This reflects an increase of 9% during 1953 in the number of homes so equipped, bringing the total to approximately 13,900,000. Since 1954, there has been a 200% increase in the number of homes with automatic heating, the company reported. The chief trend in the controls field during 1953 was to the use of electronics to control home temperatures scientifically. It is predicted that by the end of this year some 50,000 American homes will have the system which utilizes both outdoor and indoor thermostats, and automatically varies indoor temperatures with outside conditions.

BANKS WILL SPEND \$475 MILLION on new construction, expansion, and modernization programs currently in progress or planned for completion this year, according to a survey reported in Banking magazine, the official journal of the American Bankers Association. Over the total of new building and modernization programs, this survey indicates, 718 air conditioning installations are in prospect, with 530 of these installations being central systems, 69 involving packaged room units, and 41 using window-type air conditioners.

THE SUPERMARKET HAS GONE TO SEA with the commissioning of the cargo provision ship U.S.S. Regulus, largest refrigerated vessel of its kind. Thirteen 50-hp compressors power the ship's 300,000 cu. ft. of refrigerated space. This most recent addition to the Navy's fleet of ships for transporting perishable cargo is the "last word" in the design and application of naval refrigeration, according to E. H. Honegger, head of the refrigerating section, Bureau of Ships.



STYROFOAM INSULATES LONGER, MORE EFFECTIVELY



"For the past two years, we have used Styrofoam at many of our plants for insulating storage rooms, truck bodies and other uses."





NATIONAL CYCLINDED CAR COMBINE

General Offices: 840 N. MICHIGAN AVENUE • CHICAGO 11, ILLINOIS

December 4, 1953

Mr. John T. Rayburn The Dow Chemical Company 135 South LaSalle Street Chicago 3 Illinois

Dear Mr. Rayburn:

In the manufacture and distribution of CO-2 gas and dry ice, efficient insulation is an operational necessity. Our use of Styrofoam has shown that it possesses excellent characteristics as a low temperature insulating material.

For the past two years, we have used Styrofoam at many of our plants for insulating storage rooms, truck bodies and other uses. During this time we have found the performance of Styrofoam to be most satisfactory. Its resistance to water and water vapor insures a constant insulating value This, together with its light weight and good mechanical properties, have kept maintenance work at a minimum. Because of these and other advantages coupled with low initial cost, we have found Styrofoam effectively fulfills our requirements as a low temperature insulation.

Our continually increasing use of Styrofoam is the best evidence of our high opinion of its qualities.

Yours very truly.

NATIONAL CYPINDER GAS COMPANY

F F Droste, Manager Carbon Dioxide Division

pfd/mmw

National Cylinder Gas Company uses STYROFOAM low-temperature board insulation for low thermal conductivity, water resistance and long service life

THE DOW CHEMICAL COMPANY
Plastics Sales, PL 653B, Midland, Michigan

Please send me your booklet containing information on Styrofoam low-temperature insulation material.

Name

Title

Company

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City____State____

Styrofoam® rigid low temperature board insulation combines all these desired factors:

- Low "K" Factor Odorless Resistant to Rot and Mold
- Superior Water Resistance Light Weight Long Insulation Life
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Whenever you investigate insulation for low-temperature rooms, insulated vehicles, refrigerated equipment, pipe covering or perimeter insulation, specify Styrofoam. Contact your Dow sales office for the name of your nearest distributor. Atlanta • Boston • Chicago • Cleveland • Detroit • Houston • Los Angeles • New York • Philadelphia • St. Louis • San Francisco • Seattle. Or write the dow Chemical Company, Plastics Sales, Midland, Michigan.

you can depend on **DOW PLASTICS**



ONE-TWO sales punch is provided by this check list of "satisfied customers" on the display room wall of Lee Shell Co. President Irving Shell points out to a prospect the names of some Lee Shell customers in his area. Next he will turn to the display panels at the left to show the prospect some actual photographs of these jobs.



A New Twist to an Old Pitch

USING the user is hardly a new idea in the commercial refrigerator sales field. Many dealers, for instance, have used to good advantage the idea of maintaining lists of customers for whom they have made installations. Most of them carry around portfolios of installation photographs in their sales kits, in order to offer visual proof of the quality of their workmanship.

The Lee Shell Co., one of Chicago's biggest commercial refrigeration distributors, not only has combined these two tried-and-true techniques, but has made them into an eye-catching and sales-clinching display right at the very front of its extensive showroom.

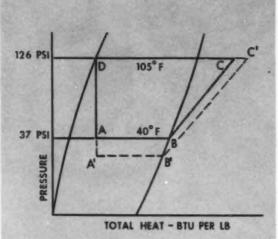
Here's how the old use-the-user idea has been developed by Irving W. Shell, president of Lee Shell Co. and immediate past president of the National Commercial Refrigerator Sales Association.

Immediately beneath a boldly lettered sign reading "Check Our Satisfied Customers" is a 13-panel index board filled with hundreds of individual inserts, each containing the name and address of another enthusi-

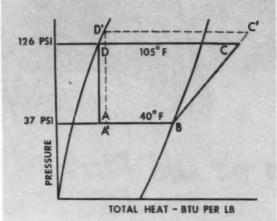
astic purchaser upon whom the Lee Shell organization can count for a favorable endorsement. These names are broken down alphabetically, to make them easier to find.

Mounted on the wall right next to this customer list is a series of 25 hinged panels, each measuring 2 feet wide by 4 feet deep, upon which are mounted 8 by 10-inch glossy prints of actual photographs of many of the installations listed on the customer index board. Included along with the installation photos on these double-sided display panels, are factory-supplied promotional pieces describing lines of equipment handled by Lee Shell Co., and tear sheets from various industry publications attesting to the activities and reputation of the company and its key personnel.

No, the use-the-user idea certainly isn't new — but by combining the customer lists and the pictorial display into a single integrated merchandising "gimmick", the Lee Shell organization has lent it new effectiveness and made it into an active sales tool which has proved to be the clinching argument on many an important sale.



Varying suction pressure Fig. 4



Varying condenser pressure Fig. 5

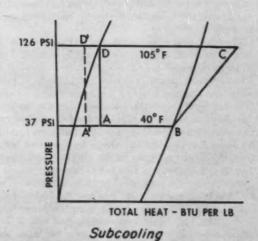


Fig. 6



The

by W. G. Wassmandorff Trane Co.

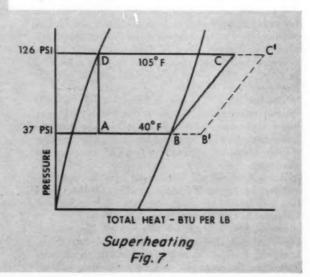
PART 2

THE effect on performance of varying the suction pressure can be seen on the Mollier diagram, Figure 4.

This illustration shows the simple refrigeration cycle in solid lines. Again, the refrigerating effect in the evaporator is indicated by the line AB and the work of compression by the line BC.

If the suction pressure is lowered so the vertical line representing pressure reduction through the expansion valve is extended to A', the refrigerating effect is reduced from AB to A'B' as read on the total heat scale. Again it should be noted that the total heat scale refers to Btu per pound of Freon circulated.

The effect of lowering the suction pressure not only reduces the refrigerating effect per pound but also reduces the pounds of Freon circulated by the compressor. At the lower suction pressure the vapor has



MAY, 1954 . COMMERCIAL REFRIGERATION

Refrigeration Cycle

less pounds per cubic foot. The compressor cylinders, however, have a fixed volume. This means that on the suction stroke the compressor takes in the same volume of vapor regardless of the pressure of the vapor. The weight of the lower pressure vapor is less, and fewer pounds are circulated.

Reducing the suction pressure has also increased the work of compression from BC to B'C' with a corresponding increase in Btu input. This appears contrary to compressor ratings, which indicate a lower BHP at reduced suction temperatures. Again, this increase as shown on the Mollier diagram is per pound of Freon circulated, and with less pounds circulated, the net effect is a reduction of BHP.

Lowering the suction pressure results in a lower coefficient of performance. By definition, the coefficient of performance is equal to the heat absorbed in the evaporator line AB divided by the work of compression line BC, both as measured in Btu on the total heat scale. The reduction of refrigerating effect to A'B' and the increase in work of compression to B'C' together reduce the coefficient of performance.

Varying the condenser pressure as shown in Figure 5 also affects the performance of the cycle. Fig. 5

again shows the simple refrigeration cycle in solid lines with the dotted lines showing the changes that occur when the condensing pressure is increased.

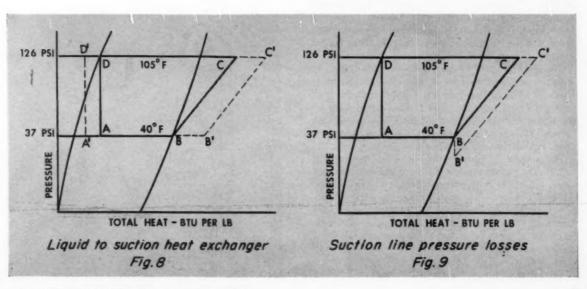
Increasing the condensing pressure from DC to D'C' results in a decrease in refrigerating effect from AB to A'B. In this case, since the evaporating pressure is unchanged, the pounds of Freon circulated, neglecting clearance losses, will remain the same and the refrigerating effect loss is Btu per pound of Freon only.

Increasing the condensing pressure has again resulted in an increase in work of compression since BC has been extended to BC'. Since there is no change in pounds of Freon circulated, this increase in work of compression results directly in an increase of BHP as the condensing temperature is increased.

Again, the coefficient of performance is reduced since the cooling effect is reduced from AB to A'B and the work of compression increased from BC to BC'

The subcooling effect (Figure 6) can be shown on the Mollier Diagram and is indicated by the dotted lines. Condensing of the vapor is shown on the simple refrigeration cycle diagram by the line CD.

Subcooling of the Freon below the saturated liquid



condition extends this line to D'. The reduction in pressure of the liquid then occurs along the line D'A' instead of the line DA. The refrigerating effect of the cycle has thereby been increased from the length of the line AB to the length of the line A'B.

The work of compression line BC remains unchanged and the coefficient of performance is thereby improved since the refrigerating effect has been increased while the energy input remains constant. In this example, it has been assumed that the subcooling takes place in the condenser and not in a suction-to-liquid heat exchanger.

Superheating of Suction Vapor

Superheating of the suction vapor is shown on Figure 7, with the vapor leaving the evaporator at B' in a superheated condition instead of B in a saturated vapor state. The refrigerating effect is thus increased, since the line AB has been extended to AB'. The work of compression has also undergone a slight increase since the constant entropy lines are not exactly parallel and line B'C' is slightly longer than line BC.

However, the increase in refrigerating effect of line AB' is greater than the increased work of compression and the net effect is an increase in the coefficient of performance. This applies to Freon-12 and will vary depending on the refrigerant and type of compressor. As shown, the superheating of the suction vapor was assumed to have taken place in the evaporator, and not in a suction-to-liquid heat exchanger.

It will be noted from the constant volume lines that the volume of the vapor at B' is slightly greater than the volume at B. This means that there will be less pounds of refrigerant per cubic foot and the compressor will circulate less pounds of the Freon.

Heat Exchanger Improves Performance

The increase of refrigerating effect per pound, however, is greater than the decrease in the pounds circulated so that the net effect is increased cooling. It should be understood that to obtain this increased cooling the superheating must be done by pick-up of heat directly or indirectly from the air conditioned space and not by piping pick-up outside of the cooled space.

The installation of a liquid-to-suction heat exchanger improves the performance of the cycle as shown in Figure 8. The suction gas, being colder than the high pressure liquid from the condenser, is superheated by the liquid and the liquid is subcooled by the suction vapor. This results in an increase in refrigerating effect by the amount of subcooling.

The amount of superheating does not increase the refrigerating effect since it did not occur in the evaporator. The total refrigerating effect is increased from AB to A'B with only a small increase in work of compression. The coefficient of performance is thereby increased. The capacity of the compressor will not be increased in proportion, however, since the increased suction temperature results in fewer pounds of Freon circulated.

The effect of pressure losses in the suction line can

also be shown on the Mollier diagram (Figure 9). The solid lines are again the simple refrigeration cycle, but as the refrigerant leaves the evaporator at B, a pressure drop of the vapor in the suction line connecting the evaporator to the compressor has been assumed.

Assuming the line is insulated so that there is no gain or loss of total heat, this pressure loss is shown in a vertical line extending down to B'. The work of compression line is thereby changed from BC to B'C'.

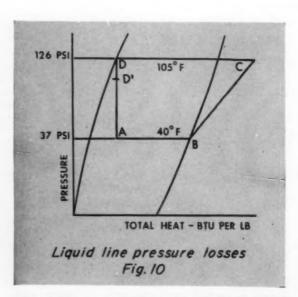
The over-all refrigerating effect AB has not been changed by this pressure loss. The coefficient of performance, however, has been reduced, since the work of compression is greater. Per pound of refrigerant, therefore, no refrigerating effect has been lost, but the brake horsepower required to circulate that pound has been increased.

Pressure Drop Cuts Compressor Capacity

However, as far as the compressor is concerned, there are less pounds of Freon per cubic foot at B' than there are at B and therefore the compressor will circulate less pounds of Freon. The over-all effect, therefore, is to reduce the capacity of the compressor. Although the work of compression has been increased per pound of Freon, the total pounds of Freon circulated will be reduced in greater proportion so that the net effect will be a lower brake horsepower.

As previously discussed, the vapor is condensed in the condenser, the process being shown by the line CD. Assuming that no heat is gained or lost by the liquid refrigerant, the pressure drop in the liquid line between the condenser and the expansion valve is shown by the line DD'.

As seen on the diagram in Figure 10, this in no way affects the performance of the cycle. Should this pressure drop be too great, however, it could affect the performance of the expansion valve, since expan-



sion valves are selected for specific pressure drops.

The Freon does not undergo a pressure drop when condensing in a water cooled condenser but there is a pressure drop when an evaporative condenser is used (Figure 11).

In order that the proper condensing pressure at D be maintained it is necessary that the vapor pressure entering the evaporative condenser be increased from C to C'. The pressure drop can then be considered as constant as the Freon condenses from C' to D. This results in an increase in work of compression with a resulting decrease in the coefficient of performance.

Pressure Drop Also in Evaporator

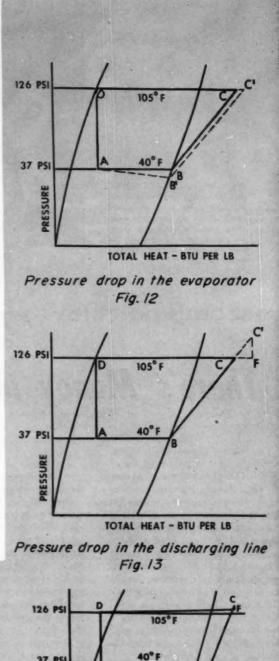
Pressure drop can also be found in the evaporator (Figure 12) resulting in a refrigerating effect line of AB' instead of AB. This results in a slight decrease in cooling effect and an increase in the work of compression. Since the cooling effect is reduced and the work of compression increased, the coefficient of performance is reduced.

The discharge line pressure drop (Figure 13) does not change the cooling effect. It does result in an increase in the work of compression since the compressor must discharge the vapor at the high pressure point C' in order to compensate for the pressure drop which is indicated by the line C'E. This pressure drop is assumed to occur with no increase or decrease in total heat. The increase in work of compression results in a reduction of coefficient or performance.

The individual effects are assembled together in Figure 14 to show the total effect on the cycle. This cycle can be compared to a self-contained unit with evaporative condenser.

The Freon leaves the expansion valve and enters the direct expansion coils as a mixture of liquid and

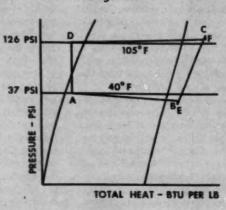
Continued on page 75



TOTAL HEAT - BTU PER LB

Pressure drop through an evaporative condenser

Fig. 11





then go looking for a trade-in that will satisfy his used equipment needs. That's the successful operating principle which Joe Garza (in center, back to camera) has used to prove without question that . . .

There's Money in Used Equipment

THERE'S plenty of money in merchandising used commercial refrigeration equipment. You just have to know how to dig it out!

For proof of this broad assertion, take a look at Haas Appliance Co. in Weslace, Tex. Here's a company that does a \$100,000-a-year business in commercial refrigeration, despite the fact that it is located in a little Rio Grande Valley town so small that it has trouble supporting a weekly newspaper. And a good share of this volume stems from the handling of used equipment.

The commercial refrigeration department of the Haas organization is under the direction of Joe Garza. Joe is the fellow who is largely responsible for the company's used equipment volume. And his method of operation is unique.

While many dealers are crying the blues about the problem of moving the used equipment they are forced to take in on trade, Joe tackles this problem from the other side of the fence. "Find the prospect first," he reasons, "then ferret out the used equipment he needs."

Operating on this basis, Joe frequently finds himself without a single trade-in on his hands. And often a piece of used equipment actually is sold even before it is taken in trade. It might have had to be rebuilt before it could be delivered, but, nevertheless, a buyer had been found — and at a good price — before the case was acquired by the Haas firm.

This type of transaction is no accident. Joe Garza is a fellow who gets around a great deal among the small retail merchants located in his trading area. He knows most of them on a first-name basis. And he realizes that many of them operate on financial margins so narrow that the purchase of new equipment is out of the question. These are the merchants who comprise the backbone of Joe's used equipment prospect list.

It's not that Joe has any objections to selling new equipment. He just

feels that the used equipment market offers greater profit possibilities. He reasons that when a retailer is in the market for a new case he usually shops around. Consequently, every competitor in the area gets in on the deal, and when it comes to bidding the trade-in most of them are offering to buy the equipment (at an unreasonably high price) without having any idea of what they can do with it.

That's why Joe Garza's "reverse English" approach has proven so effective. Here's how he works it.

Joe goes out to the little retailer who, because of his small volume of business, has no choice but to buy used refrigeration. Walking in, he introduces himself (if he isn't already known), looks at the cases, and opens up with something like this:

"You'll soon have to replace that meat case. Like what you are using?"

"Got one to sell?"

"No," Joe answers. "But I may

run into something. Got a couple deals cooking." (Note this plant).

"What you got to get for them?"
"What are you willing to pay for a case?"

"Not more than it's worth."

"But give me an idea," Joe insists.

"As much as five hundred?"

"The case would have to be worth that much."

"If I can't get the trade-in worth the money," Joe answers (picking up the plant he has made), "I won't trade."

Get the Details First

Joe and the retailer talk back and forth and Joe knows before he leaves just what the man will buy.

Remember, at this time Garza still has nothing specific to offer. Hence, the retailer can't begin chiseling down the price. Before Garza takes leave he asks in a casual way:

"If I happen to get an extra clean case would you go a little higher than five hundred? Say, as much as six-fifty?"

Usually, for an extra clean job, the retailer will be willing to pay that much difference.

With a notebook filled with such prospects, Joe goes to bid in a trade-in against a competitor. Suppose that, in order to save the sale of a new \$1300 case, the competitor has bid as much as \$400 for the trade-in that Garza otherwise wouldn't allow any more than \$250 for.

Gains Edge on Competitors

Chances are that the competitor doesn't know what he can get out of that trade-in, and doesn't know how long he will have it on his display floor. At best, he will be in the position where he will have to take his time and go out and find a prospect for that one box.

On the other hand, Garza may have as many as three or four prospects for that box. He can safely allow \$400 because he will not have any selling expense involved to get rid of it.

Sure, he spends time getting his used prospect list together, and keeping it current — but divide that among a possible 100 leads, and what does that one lead cost him? Too, while he is getting these used equipment leads, he usually runs

Continued on page 7





A SIMPLE COMPRESSOR-COIL HOOKUP like this can spell the difference between success and failure for the small or everage-sized fruit grower. By providing properly refrigerated storage conditions, this equipment enables one Michigan fruit farmer to hold his crop to sell during the most advantageous market conditions, thus assuring him . . .

Higher Profits on Produce

REFRIGERATED storage facilities can put a capital "P" in "profits" for the average-sized or small farm fruit grower. Withholding an orchard's yield, or a substantial portion thereof, for a more favorable price later on in the season will give the grower with plenty of refrigerated storage a substantial edge on profits over the grower who is forced to sell out during the glut of harvest time.

The theory of withholding for a better price is certainly not new in any sense of the word. Most growers, while recognizing the advantage, also are aware of the disadvantages. For unless the orchard is equipped with proper storage facilities, the product may wither and its quality become impaired during the holding period.

Although the majority of fruit growers are aware that refrigeration is the definite answer to this storage problem, the initial cost of space and equipment comprises the basic stumbling block. This is especially true for the small fruit farmer. There is, however, a realistic approach. If the additional profits pocketed each season are balanced with the cost of proper refrigeration facilities, over a period of years the investment for equipment is within the reach of many growers.

For example, consider the case of Lewis R. Gray, an enterprising orchardist operating a farm in the Michigan fruit belt near Traverse City. With the help and guidance of Paul Garthe, Frigidaire commercial refrigeration dealer in Traverse City, Mr. Gray installed a small fruit storage plant on his place.

The installation was made last summer before picking time rolled around. Thus, when Gray was ready to harvest his crop of peaches, he was able to put a substantial portion of them into cold storage. By waiting for a more favorable market price, he actually doubled his receipts. Subsequently, Gray employed the same with his 1000-bushel crop of apples.

Gray's total investment, including a concrete block building, cooler, insulation, refrigeration equipment, and materials, came to about \$3000. This figure is extremely low for an installation of this kind, but Gray was able to make substantial reductions by employing local farm labor,



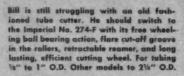
Time for a Change

These old "high wheelers" have long since been discarded in favor of modern, streamlined models. But not so with tube working tools. Many of these grand old workhorses are still being used—wasting time, precious labor, and profits.

If you have any of these, now is the time to change to modern Imperial Tubing Tools—tools with ever so many important improvements that mean faster work, better installations, and money saved.



but this







Tools of yesteryear just can't make flares like those formed by the Imperial No. 500-F Rol-Air Flaring Tool. And its operation is a lot easier. It automatically burnishes flares to a high polish. Provides extra assurance against leakage. "Rolls flares in the air" to get stronger flares. Flares 6 sizes of tubing: 3/16", 1/4", 5/16", 3/8", 1/2", 5/8" O.D.





Puffl Gruntl Bending tubing with old time benders is no jake — it's a struggle every time. What a contrast to the modern Imperial No. 364-F calibrated, open side tube benders. Strong — yet light weight. Form smooth even bends to a short radius — any angle up to 180°. Individual bender for each size 3/16" to 3/4" O.D. Also gear type and combination benders.

Write for New Taking Catalog No. 3097

See Hour Jobber Today

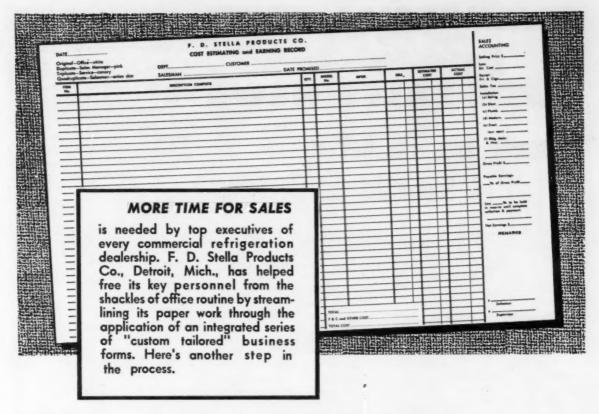


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FITTINGS . VALVES . DRIERS . CHARGING LINES . TOOLS for Cutting, Floring, Bending, Pinch-Off, Swedging



The Cost Estimate and Earning Record - A 4-WAY SALES HELP

THE most important form used in the sales department is the Cost Estimating and Earning Record. This form serves the principal purpose of listing by model number and manufacturer the items used in every job in order to:

- (a) help arrive at an estimated cost for the job;
- (b) serve as a guide for the purchasing agent;
- (c) serve as a job record for the shipping department; and
- (d) help determine the actual cost for commission on a specific sale.

After the material cost for a given bid has been estimated, installation costs are estimated and added. The overhead and profit is then added to this figure.

Mutually satisfied with the estimate, the salesman and sales manager sign the original copy and it is then put in the customer's file for future reference.

If the bid is successful, the duplicate copy of the cost estimating form is used by the purchasing agent, who also notes date of order and date of expected delivery by the manufacturer.

The triplicate copy, cut so as not to show any cost figures, is given to the shipping clerk, whose responsi-

bility it is to follow through on the actual delivery of the items concerned and to inform the purchasing agent of any delay encountered.

In our particular company the shipping clerk also acts in the capacity of installation supervisor and, consequently, he sees to it that the items are not only delivered, but properly installed as well.

The fourth copy of this record is retained by the salesman, whose interest in the job is normally not only the commission he earns, but also the satisfaction of the customer. Possession of this copy enables him to periodically check the progress of the installation and, finally, to get together with management on the matter of earnings.

Returning for a moment to the original copy, it should be pointed out that this is used by the accounting department for the purpose of cost control.

In summary, this form places responsibility for follow-through of a job squarely where it belongs, and enables a just accounting for commission purposes. In every instance where a dispute has arisen in this regard, it has been quickly and amicably settled by reference to the Cost Estimating and Earning Record.

COMMERCIAL Refrigerator SALES NEWS

Salesroom Holds The Key To A Successful Sales Program

A condensation of a talk presented by S. G. Taylor, Taylor Refrigerator Co., Des Moines, Iowa, before the 7th annual convention of the National Commercial Refrigerator Sales Association.

A T least 75% of our customers come into our sales room at some time. Most often they come in when they are contemplating the purchase of new equipment. They also come in to pay bills and buy supplies.

How we handle them when they come in, and the impression we make on them at that time, has, we think, an important effect on our sales.

Our sales room is a focal point where we can work to the best advantage. Its appearance creates a lasting impression on our customers. Here our product can best be demonstrated. Here related services can usually be brough to the buyers' attention. We can show our repair department — our parts department.

Certainly here we can meet competition to our best advantage. Remember we didn't go out to sell the customer who has called at our display room—he came in to look and to buy.

We display both new and used equipment in our display room. One-half of the room is devoted to new units, and we try to keep this section clean and orderly. We have a terrazzo floor and we keep it clean. We have electric outlets about the wall and in the floor to connect lighting on units and refrigeration when desirable.

We keep about ten to twelve new

refrigerator items on display as well as counter equipment, meat and bone saws and condensing units. We have blown up installation pictures on the walls. We have the room well lighted and a good display window on a well traveled street.

A line of reach-in refrigerators down the center isle of the room separates the new equipment from the used. We give as much display to our reconditioned used equipment as we do to our new. We think the sale of our used equipment is the most important adjunct to our business and our profits.

We believe the time to recondition used equipment is before you sell it, not after you sell it. Since you probably have to recondition it anyway, it stands to reason it will sell quicker and at a better price if it is displayed at its best.

We often use live testimonial selling by taking our prospects who come in, out to nearby satisfied users, who are generally better salesmen than we are, when they are really happy about the equipment they have bought from us. We find this very effective and it has become regular routine.

We try at all times to sell the profit angle of our equipment. We avoid quoting or discussing prices until we feel the customer is convinced that the equipment will increase his sales and profits. We try to follow the slogan, "Don't quote a price until you prove a profit."

We insist on being truthful with our customer. Any sale made on an untruth or an exaggeration, we find, will cost you many times more in the end than what you may gain at the moment. As always, complete honesty pays in any business transaction.

We will plan a customer's store for him and provide him with blue prints of store arrangement, wiring plans, and plumbing plans, if he needs these services. We have one room in our sales area equipped and devoted to this work,

We are careful to guard against the mistake, however, of selling our prospect on the idea that he needs a plan, when he actually comes in to make a purchase. I have often seen this done, and someone else ended up with an order while we went hungry. Plans have their place — but not every place.

We keep careful records of each prospect who calls in our showroom and does not buy while there. We record and file quotations made for ready reference and refer all

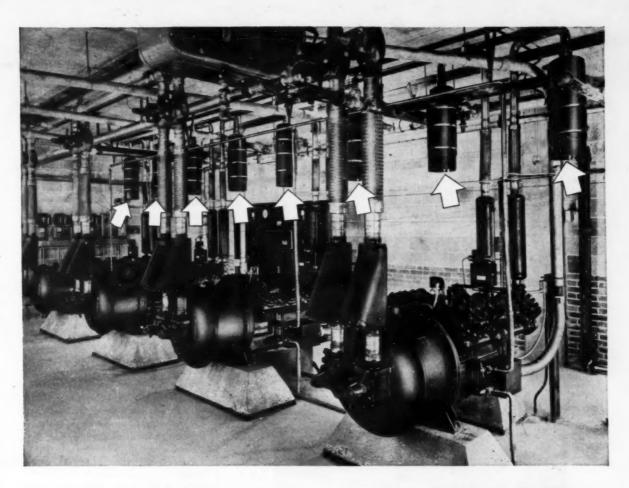


information to salesmen whose job it is to take care of this customer.

When prospects come in we try to give as complete a demonstration as time will permit. It may be an old story to us, but is a new story to the customer. This type of selling really helps to get the customer ready to sign the order. The best chance you'll generally ever have to sell the prospect is when he is in your sales room.

Some one feature of your equipment probably appeals to your customer more than any other. Make this your theme song, — for on this one feature he will probably decide to buy.

Don't waste words — aim at the order — keep it in your gun sights



Temprite Oil Separators maintain high efficiency of air conditioning system at Denver Post!

Keep oil away from the low side and in the compressor where it belongs! Lower temperatures are then easily reached, the compressor operates on minimum time only, and the crankcase oil level remains constant. The refrigerant remains at its true boiling point-heat transfer is increased 15% to 20%—and the expansion valve operates more efficiently, free from oil, dirt and corrosion. Do it all with a Temprite Oil Separator.

The Denver Post air conditioning system, installed by the T. C. Alexander Company of Denver, has been in operation for 31/2 years, performing at very high over-all efficiency-than's, in large measure, to eight Temprite Oil Separators (two to each 100 ton machine).



in sizes from 1/6 to 150 tons. TEMPRITE PRODUCTS CORP.















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Oil Separators ☐ Ask your representative to call

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all the time. You are hunting in the richest hunting ground in the world—your own display and sales room.

NCRSA PLANS 8TH MEETING FOR NEW YORK, NOV. 8 & 9

Members of National Commercial Refrigerator Sales Association have voted to hold the organization's 8th annual convention on Monday and Tuesday, November 8 and 9, at the Hotel Statler in New York City.

1954 SALES POTENTIAL SHOWN BY NARGUS POLL

A 10% increase over 1953 in new store construction and store remodeling is anticipated by the 60,000 members of the National Association of Retail Grocers in the United States, according to a survey conducted recently by that organization.

Facts revealed by this survey indicated a 7.9% increase in new stores in 1954, or 4800 new stores at an average cost of \$75,000. In

addition, 34.3% of NARGUS members expect to spend an average of \$9460 on remodeling, and 54.3% expect to spend an average of \$9853 on new equipment. This totals up to \$320,000,000 in new equipment and fixtures.

GROCERS SUPPORT NEW SENATE, HOUSE BILLS

The National Association of Retail Grocers has adopted a resolution approving a Bill (S. 2575) which has been introduced in Congress by Senator Kefauver, and a companion Bill (H.R. 6619) introduced by Representative Metcalf, which would give small business concerns freedom to accelerate the time during which sums spent for business property, such as land, buildings, or equipment, may be charged off in the form of deductions from taxable income.

These Bills, if passed by Congress, will make it possible for small businesses to replace the capital they have spent for business property in a much shorter time than is now allowed, thus making available to these businesses still more capital for expansion and modernization.

NCRSA ADDS 4 MEMBERS

Four new distributor members have been added to the ranks of National Commercial Refrigerator Sales Association. These new members are: A to Z Supply Co., Lima, Ohio; Friedrich Refrigeration, Chattanooga, Tenn.; Koldflo Refrigeration, Inc., Columbus, Ohio; United Refrigeration Service, Inc., Columbus, Ohio.

McCRAY NAMES NINE NEW DISTRIBUTORS

Nine new distributors have been appointed to handle McCray Refrigerator Co., Inc.'s complete line of commercial refrigeration and residential freezers.

The new distributors and the areas they will serve are: DeWitt Segler, Macon, Ga.; Jesse J. Bickford, Bickford Distributors, New Orleans, La.; O. L. Peeples, Naples Refrigeration Service, Collier



"Pebbletone" BEVERAGE COOLERS

by * KOLD-DRAFT

NEWLY DESIGNED

COMPLETELY MODERN

A NEW HIGH IN EFFICIENCY



LATORING

- 1-A new low price
- 2-Beautiful and efficient SLOPING FRONT DESIGN
- 3—Truly a SPACE MISER—extremely large capacity in a small space
- 4-New "easy pickup" method of longitudinal NECK-TO-NECK bottle stacking
- 5—Models available—13 27 40 54 case capacity, remote or self contained

Write Today For Literature And Prices

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UNIFLOW MANUFACTURING CO.

EAST LAKE ROAD, ERIE, PA.

BUILDING YOUR BEST VALUE IN BEVERAGE COOLERS SINCE 1932 Circle No. 49 on Reader Service Card County, Fla.; W. S. Carpenter and J. R. Fowler, C & F Distributors, Inc., seven Miami, Fla. counties; and Taft, Warren & Taft, Inc., Baltimore, Md.

E. N. Hester, Hester Service Industries, Inc., Lincoln, Neb. and eleven surrounding counties; Max L. Suter, Rochester, Minn. and eleven Minnesota counties; J. M. Stuart, Stuart Refrigeration Sales, Glasgow, Montana and 29 Montana counties; and White Refrigeration Co., Great Falls, Montana, to sell exclusively in two Montana counties and have selling privileges in 29 others.

MINNEAPOLIS DEALER ISSUES NEW CATALOG

In another step aimed at providing better service for the food dealers in its territory, Allied Store Equipment Co., Minneapolis, Minn., dealer of commercial refrigeration equipment, air conditioning, and food store supplies, has issued a new 16-page catalog illustrating and describing the full line of equipment handled by this firm.

Also included in this informative catalog is a description of all the various facilities and services which this company offers to its customers. A handy order card also is attached.

ENLARGES FACILITIES FOR MAKING SODA FOUNTAINS

S. & R. Soda Fountain Mfg. Co. has added new equipment and enlarged its facilities to take care of increased demands for its line of soda fountains. The firm is also planning to expand production on two new models: the covered relish stand, and the refrigerated combination sandwich unit.

WINNERS OF WARREN CO. SALES CONTEST NAMED

Four top prize winners in the greatest national sales contest ever staged by that company have been announced by Roger Jacobs, executive vice president of the firm. These winners have been awarded their choice of a full week's ex-



The extra sale of the INTER-MATIC time switch means \$10.00 more profit

Here's a plus feature to offer your prospects and make easier sales for you. An Inter-Matic time switch will automatically turn the office air-conditioner on early, so that it will be cool when the office help . . . and customers . . . arrive. At day's end the unit is turned off automatically, eliminating wasted electricity through forgetfulness. The built-in "Skipper" device allows skipping weekend and holiday operation.



GET THE FACTS, MAN

We'll show you how you can increase sales and profits. Mail this Coupon Today International Register Co. 2624 W. Washington Blvd., Chicago 12, Illinois Please send me Bulletin 54M on the Inter-Matic Time Switch way to more profits.

Name Firm. Address. City. Zone State pense-paid trip for themselves and their wives to either the Waldorf-Astoria hotel in New York City or the Monte Carlo hotel in Miami Beach, plus extra cash awards for the wives.

Topping the list of prizewinners was Frank Cox, Cox Refrigeration, Frederick, Md. Next in line, in the order named, were: G. C. Richey, Richey Refrigeration & Equipment Co., Columbia, S. C.; Russell E. Rich, Jr., Rich Refrigeration Co.; and L. C. Warren, Jr., L. C. Warren Jr. Co., Inc.

Approximately 200 distributors throughout the United States participated in this national contest. In addition to the awards named, there were six other distributor prizes including merchandise and cash awards. Six cash prizes also were awarded to top distributor salesmen.

Sixty-two of the company's distributors produced more than 100% of the special contest quota assigned to them, Jacobs pointed out.

BUY FROM YOUR REFRIGERATION WHOLESALER

BALLY NAMES TWO CANADIAN OUTLETS

Two Canadian distributors have been appointed by Bally Case and Cooler Co. They are Maison Nadeau, Ltd., of Montreal, Quebec, and Kingsway Refrigeration Co., Ltd., of Vancouver, British Columbia.

The Nadeau firm will serve as exclusive distributor of Bally's refrigerated cases and coolers for the entire province of Quebec. Kingsway is exclusive distributor for all of British Columbia.

TRUCK OPERATORS AIR TRUCK COOLING PROBLEMS

The truck operators' viewpoint concerning refrigerator vehicle design was outlined to members of the Truck-Trailer Manufacturers Association during the association's recent 13th annual convention in the Boca Raton Hotel and Club, Boca Raton, Fla.

Representative views expressed were that carriers under the present rate structure want a minimum payload of about 26,000 lbs., but sometimes find refrigerated vehicles too small and too heavy to achieve that ideal.

Everybody wants less thickness in body walls and less weight but everybody also wants more efficient insulation.

Among other developments, according to Harold Johnson, transportation specialist, U. S. Dept. of Agriculture, his department plans to start work on a study of temperatures being maintained in city delivery trucks hauling frozen foods.

Johnson reported past tests of over-the-road hauls of refrigerated commodities resulted in the launching of a study to determine the amount of moisture accumulation in vehicle walls, floors and ceilings.

The additional weight of water brought about by moisture accumulation may amount to as much as 1500 lbs. in a trailer, thereby cutting payloads and costing a carrier as much as \$2500 per vehicle per year.

Johnson also warned that precooling of cargoes is essential, preferably to 10° F.



FIRST STEP in A Quality Installation...



READING "LEKTROSEAL" **COPPER REFRIGERATION**

> Soft temper for easier forming . . . dehydrated—with crimped ends to seal out all moisture and dirt . . . and keep the inside surface absolutely clean. Comes in handy 50-foot coil packed in its own convenient protective carton, clearly labeled for easy identification. To be sure of the job—be sure to specify Reading.



Sold Through Wholesalers Only

TUBE CORPORATION

EMPIRE STATE BUILDING, NEW YORK 1, N. Y. PLANT: Reading, Pa.

- Distribution
- - WOODSIDE, L. I., N. Y.
- . HOUSTON, TEXAS, 1121 Rothwell St.
- ATLANTA, GA., 690 Murphy Ave., S.W., Unit 5, Bldg. B
 CLEVELAND, OHIO 4615 Perkins Ave.

Circle No. 52 on Reader Service Card and AIR CONDITIONING . MAY, 1954

Known the World Over

EVAPORATIVE CONDENSERS



COOLING TOWERS



BALTIMORE AIRCOIL COMPANY, INC.

BALTIMORE 18, MARYLAND

Circle No. 53 on Reader Service Card

MAY, 1954 . COMMERCIAL REFRIGERATION

SOF THE INDUSTRY

A. J. DE FINO IS NEW ARI LEADER

A. J. De Fino, vice president, Fedders-Quigan Corp., was elected president of the Air-Conditioning and Refrigeration Institute at its annual board of directors meeting held at The Greenbrier, White Sulphur Springs, W. Va., on April 1.

He succeeds L. C. Mc-Kesson, vice president in charge of sales, Ansul Chemical Co.

James Emmett, Jr., vice president, Jas. P. Marsh Corp., was elected vice president. Elected treasurer was M. M. Lawler, vice president, Worthington Corp.

Elected to the board of directors of the Institute are: W. H. Aubrey, Frick Co.; W. F. Bakke, Sub-Zero Freezer Co., Inc.; F. G. Coggin, Detroit Controls Corp.; A. J. De Fino, Fedders-Quigan Corp.; J. A. Dugan, Bundy Tubing Co.; E. B. Dunphy, Acme Industries, Inc.; James Emmett, Jr., Jas. P. Marsh Corp.; C. V. Gary, Henry Valve Co.; Walter A. Grant, Carrier Corp.; B. W. Hanson, Schaefer, Inc.; J. R. Hertzler, York Corp.; H. F. Hildreth, Westinghouse Electric Corp.; R. H. Israel, Virginia Smelting Co.; G. K. Iwashita, General Electric Co.; L. W. Larsen, Tecumseh Products Co.; W. F. Switzer, Frigidaire Div., General Motors Corp.; M. M. Lawler, Worthington Corp.; H. F. Spoehrer, Sporlan Valve Co.; and A. O. Vogel, The Vilter Mfg. Co.

Advisory members of the ARI board of directors, made up of past presidents, are: John E. Dube, Alco Valve Co.; E. M. Flannery, Bush Mfg. Co.; S. E. Lauer, York Corp.; R. H. Luscombe, Penn Controls, Inc.; A. P. Shanklin, Carrier Corp.; W. A. Siegfried, Superior Valve

HEADS INSTITUTE



A. J. De Fino

& Fittings Co.; and K. B. Thorndike, Detroit Controls Corp.

The above named, plus L. C. McKesson, retiring president, and George S. Jones, Jr., managing director, complete the official board of directors of ARI for the fiscal year beginning May 1.

General headquarters of ARI are located at 1346 Connecticut Ave., N. W., Washington 6, D. C.

STARTS PRODUCTION ON NEW INSULATION

Production of a new, highdensity, compressed fibrous glass material with excellent shock and vibration-borne sound absorbing qualities has been started by Fiber Glass Div. of Libbey-Owens-Ford Glass Co.

According to Clinton F. Hegg, general sales manager for the division, the new material is already in use in blower housings on air conditioning units and in other applications.

Current and potential applications of the material include blower housings and intake deflectors on air conditioners, thermal insulation, vibration absorbers, and automobile safety pads.

MARLOW OPENS NEW PLANT IN TEXAS

Marlow Pumps, Div. of Bell & Gossett Co., has established a new branch manufacturing plant in Longview, Texas, 125 miles east of Dallas.

The new plant's location offers improved shipping facilities and faster service to customers. As a result of the improved service afforded by the Longview plant, the company's plant in De Queen, Ark., will be shut down and all operations formerly conducted there will be transferred to Longview.

The complete line of Marlow pumps will be manufactured in the new facilities. A stock of all type pumps and parts will be maintained there and service facilities will be available.

SCHOLARSHIP GIVEN BY SHERER-GILLETT

An annual two-year scholarship in Refrigeration Technology at Ferris Institute, Big Rapids, Michigan, has been established by Sherer-Gillett Co. according to John H. Coolidge, president of the company.

The scholarship has a total cash value of \$1200.00 with the added incentive of full-time employment for the summer vacation at the company's factory, plus the opportunity for technical employment with Sherer-Gillett following graduation.

Selection of the annual recipient will be made by a committee composed of the Superintendent of Schools of Marshall, Mich., a member of the High School faculty selected by him, and an official of Sherer-Gillett Co.

"We have a two-fold purpose in establishing the scholarship," Coolidge stated. "First, we believe that the commercial refrigeration field offers a good opportunity to an ambitious young man for a life-long career and we hope to channel some of our high school graduates into our industry.

"Secondly, although we do want to emphasize that the financial status of applicants or their families will not be a factor in the selection made for the scholarship, it may be that the recipient would not be able to attend college were it not for the material help afforded by the scholarship. If in this way some worthy young man can be helped, we will feel doubly privileged for being able to make it possible."

CAGE BUYS CAR CONDITIONER FIRM

Industrialist Ben Jack Cage and associates have purchased the A.R.A. Mfg. Co. of Fort Worth, Texas, an independent manufacturer of automotive air conditioners, from O. P. Leonard, Fort Worth merchant.

Under the new ownership, the firm will be known as A.R.A. Mfg. Co., Div. of Jack Cage Industries, Inc.

STARTS FIRM TO HANDLE MOTEL WORK

Richardson & Richardson, Inc., air conditioning and heating contractors of Nutley, N. J., have established a separate division known as Motel Conditioning Co., according to L. Lee Richardson, president.

The new division will handle all the company's motel contracting work consisting primarily of combination heating and cooling systems, and activities will be concentrated along the eastern seaboard.

LOOKING AND LEARNING AT ARI CONFERENCE RESTAURANT SHOW



OPERATING DISPLAYS received a lot of attention at the first of the new series of ARI Educational Conferences held recently in Long Beach, Calif. For example, the Kinetic Chemicals display (foreground) revealed differences in operating characteristics of Freon-12 and 22 refrigerants; the Alco Valve display (center) demonstrated various types of refrigerant controls.



LEVEL MASTER CONTROL for flooded applications is explained to Darrell R. Smith (left) of Pomona, Calif., by J. A. Hogan of Sporlan Valve. At right, Kelvin Dawson of Olympia, Wash., makes notes as he discusses a problem with J. T. Barry and P. J. McCarthy of Sporlan.



USE OF DOUBLE-FLARING tool is demonstrated by Jim Norris of Imperial Brass (standing, right), to B. B. Okimoto of Refrigeration Service & Supply Co., Honolulu. Men with headsets in foreground watch and listen to sound slidefilm on use of tube cutters, an innovation in exhibit setups that complies with conference rule against loudspeaker type apparatus.

DRAWS 391 FIRMS

391 firms who sell to the restaurant market have already reserved space to exhibit in the National Restaurant Association's 35th Annual Convention and Exposition to be held May 10 to 14 at Chicago's Navy Pier. The entire show will house 890 booths.

More than 25,000 members of the restaurant industry and allied fields are expected to attend. More than \$2 .-000,000 worth of food and equipment will be displayed.

Refrigeration and air conditioning equipment manufacturers currently scheduled to exhibit at the show in-

American Automatic Ice Machine Co., American Gas Machine Co., Bastian-Blessing Co., Carbonic Dispenser Inc., Carrier Corp., Dunhill Soda Fountain Corp., Ebco Mfg. Co., Fogel Refrigerator Co., Foster Refrigerator Corp., Frigidaire, Herrick Refrigerator Co., Ice Appliances Inc., Ideal Cooler Corp., Jordon Refrigerator Co., Stanley Knight Corp., Leitner Equipment Co., Lern

McCall Refrigerator Corp., Kelvinator, Neptune Lobster Tanks, Puffer-Hubbard Mfg. Co., Seco Co. Inc., Selmix Dispensers Inc., Star Metal Mfg. Co., Sweden Freezer Mfg. C., Victory Metal Mfg. Co., Henry Vogt Machine Co., Wilson Refrigeration Inc., York Corp., Koch Refrigerators Inc.

PARKER OPENS OWN MFG. REP. FIRM

John W. Parker & Assocs. has announced that the firm has begun operations as a manufacturer's agency in Atlanta, Ga. The company will represent Jamison Cold Storage Door Co., Market Forge Co., and Philadelphia Tramrail Co.

John W. Parker, Jr. was formerly connected with Leo S. Bosarge Co., a wholesale refrigeration supply jobber in Atlanta, as a sales engineer, general manager, 2nd vice president and director.

W. E. Sullivan, also formerly connected with Bosarge Co. is sales engineer for the new company, and Miss Gladys McCoy is secre-

CANADIAN JOBBER NAMES McLEAN ALBERTA MANAGER

Blake McLean has been appointed manager of the Alberta branch office for Refrigerative Supply, Ltd., refrigeration, air conditioning and heating supplies wholesaler, in Vancouver, B. C.

Refrigerative Supply also has announced a new address for its Calgary office. The new address is: Refrigerative Supply Ltd., Mezzanine Floor, Greyhound Bldg., Calgary, Alberta.

READING TUBE OPENS CLEVELAND DEPOT

Reading Tube Corp. has opened a new distribution depot in Cleveland according to Martin Mack, president.

The new distribution center is capable of warehousing a complete stock of tubing and pipe and will provide improved delivery service to Ohio and to parts of Michi-

AUTO-LITE EXPANDS RECEIVER PLANT

Expansion of facilities in its Lockland, Ohio, plant for the manufacture of liquid receiver tanks for the refrigeration industry has been announced by Electric Auto-Lite Co.

At this plant, Auto-Lite is capable of producing shells up to 91/2 inches in diameter and 36 inches in length. Shells can be manufactured to meet test pressures up to 3,000 p.s.i.

MOTOR MAKER MOVES

Loyd Scruggs Co., contract manufacturers of fractional horsepower motors and other electro - mechanical assemblies for heating, air conditioning, refrigeration, aircraft, and other applications, has moved office and manufacturing facilities to a new, modern plant in Festus, Mo.

D. F. McCarron is president of Loyd Scruggs Co. which is a subsidiary of Dazey Corp.

FAN SHIPMENTS OFF 9% IN 4TH QUARTER

The Bureau of the Census, Department of Commerce has released figures on fans, blowers, and unit heaters for the fourth quarter in 1953.

Shipments of fans, blowers, and related equipment in the fourth quarter of 1953 were valued at \$42.1 million, 9% below the value of shipments reported for the third quarter. The value of orders booked during the fourth quarter amounted to \$41.8 million, 4% above the \$40.4 million booked for the preceding quarter.

Shipments of unit heaters and related equipment in the fourth quarter amounted to \$18.5 million, an increase of \$16.2 million in the third quarter of 1953. Value of orders booked during the fourth quarter was \$16.7 million, down 2% from the \$17.0 million reported for the preceding quarter.

The statistics for the fourth quarter are based on reports from 201 manufacturers active in that quarter.

MARLEY BUILDS NEW LOUISVILLE PLANT

Marley Co., Kansas City, Mo., has built a new plant in Louiseille, Ky., to meet the demand for the company's mechanical draft cooling towers for air conditioning and refrigeration service. The new plant replaces Marley's former manufacturing facilities in Louisville.

Occupying ten acres, the new plant provides 77,000 sq. ft. of production space, and is equipped with the most modern machinery for rapid fabrication of packaged water cooling towers.

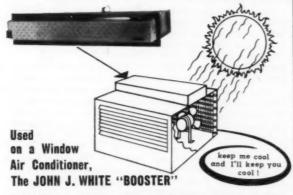
Here steel towers will be manufactured in a range of standard sizes to meet cooling requirements in the 2- to 60-ton range. In addition, new all-steel counterflow towers will be fabricated for large capacity water cooling service. Another product of this facility is the company's line of air cooled heat exchangers.

Adjacent to the new plant Marley has optioned $4\frac{1}{2}$ acres in anticipation of still further expansion.

Go Modern_Sell Modern



Boost Your Window Cooler Profits With a "Booster"



- Maintains optimum water level in slinger pan automatically.
- · Lowers head pressure.
- · Lowers operating cost.
- Permits operation of unit above present outside design operating conditions.
- Increases capacity.
- Lowers unit operating noise level.

If Your Unit Is In A "Sun" Window, It Can Use A "Booster"

John J. White INC.

800 McCarter Highway

Newark, New Jersey

G-E AIMS TO LEVEL COOLING "CURVE"

One of the greatest challenges to the rapidly growing air conditioning industry is that of spreading its sales on an orderly year round basis, according to G. K. Iwashita, general manager of the commercial products department of the General Electric Co.'s Air Conditioning Div.

"It just doesn't make sense to crowd the greater share of a billion dollar business into a few relatively hot weather months," Iwashita said.

This is particularly true of commercial packaged equipment which goes into stores, restaurants, offices and factories, he said. This past summer, he continued, there were too many stores and restaurants that had to ride out the summer without air conditioning because installing contractors just couldn't get to them in time.

Iwashita said the answer is an aggressive long-term campaign to educate buyers to the advantages of buying cooling equipment in the cold weather months.

The advantages to the industry in spreading the season and eliminating the summer peak are obvious, but the advantages to the buyer are equally real, in Iwashita's opinion.

Lower installation costs, more adequate engineering surveys, and more time to do a better job constitute the really important arguments for installing equipment during the winter months, he said.

Most buyers are naturally reluctant to spend money for something they don't immediately need, but even this objection has been eliminated by the liberalized financing plans now available, he added.

Under the G-E financing plan, the first monthly payment on equipment bought in October through April is not due until May 1. In addition to these easy skip-payment terms, a further inducement to the early bird buyer is the lower price that generally prevails during the cold weather months, Iwashita said.

COOL-ETTE OFFERS 15% PRICE CUT

Cool-ette, Inc., manufacturer of residential air conditioners has announced a 15% price reduction to distributors who purchase in truck load quantities.

The new price structure is made possible through increased production and is intended to implement Coolette's 1954 sales campaign, according to Emanuel Feinberg, president.

The 1954 line includes 10 models in 2- and 3-hp sizes, horizontal or vertical styles.

UNARCO MEN IN FIRST SALES MEETING



ADDRESSING SALES REPRESENTATIVES for Union Asbestos & Rubber Co. at the firm's first annual sales meeting in Chicago is Chester S. Stackpole, new general sales manager of the Heating & Cooling Div. Others at the speaker's table included: E. E. Hokin, vice president in charge of the Heating & Cooling Div.; J. F. Corcoran, W. H. Fehrs, and C. L. Moorman, vice presidents. One hundred sales representatives from the U.S. and Canada attended the meeting.

ARI CONFERENCE ATTRACTS 1,500

Another successful ARI Educational Conference was scored at Long Beach, Calif., on March 11-13, with 1,500 visitors in attendance.

Sixty-nine exhibitors furnished educational exhibits of a high calibre. Interest in the educational talks was reflected by a good attendance.

Cooperating with the Air-Conditioning and Refrigeration Institute in putting on the Educational Conference on Commercial Refrigeration and Air Conditioning were the Refrigeration Service Engineers Society, the Refrigeration Equipment Wholesalers Association and the Refrigeration and Air Conditioning Contractors Association. State conventions were held by the three last named.

Panel discussions at the start of each session were very popular. Appearing on the first day's program were J. E. Blythe, Airtemp Div., Chrysler Corp., who spoke on "Room Air-Conditioners for Both Cooling and Heating," John D. Bopp, chief chemist, Ansul Chemical Co., whose topic was "Let's Stop Burying Our Heads in The Sand"; John H. Spence, service manager, Hussmann Refrigeration, Inc., who explained the use of a recording suction pressure gage in refrigeration service and John F. Daly, manager, Ice Plants, Atchison, Topeka and Sante Fe Railway Co., who gave a talk on the service and maintenance of mechanically refrigerated rail-

Talks on the second day of the conference included the following speakers and subjects:

B. E. Meler, manager, Field Sales Service Div., Weber Showcase and Fixture Co.- "Application and Service Problems of Open Self-Service Cases": L. W. Larsen, sales manager, Tecumseh Products Co.—"Drying Hermetic Systems"; W. O. Stewart, manager, Los Angeles Office, Johnson Service Co. - "Pneumatic Control Systems"; and John E. Unger, service manager, The Coolerator Co.-"Why Not Change Parts of A Hermetic System."

The program on Saturday morning consisted of three talks by industry experts covering topics of interest to all segments of the industry.

Arthur J. Hess, president, American Society of Refrigerating Engineers, called attention to "New Horizons in Refrigeration and Air Conditioning"; M. M. Lawler, vice president of Worthington Corp., outlined "What's Ahead for 1954"; and Geo. S. Jones, Jr., managing director, Air-Conditioning and Refrigeration Institute, urged "Let's Do A Better Selling Job."

The conference concluded with a banquet and dance. The next ARI Educational Conference will be held in Minneapolis on Nov. 18-20.

CARRIER HONORS ST. LOUIS BUILDER



GRAND PRIZE WINNING HOME in Carrier Corp.'s recent architectural competition will be featured in a St. Louis home development by Marvin C. Glick, who has been building "Weathermaker" home projects for a year and a half. Glick plans to begin construction on 150 prize winning homes immediately. He is shown studying house plans with Herbert H. Piou, Carrier distributor, and George F. Robinson, manager of Carrier's St. Louis branch office.



T 414 Temperature Controller
A heavy-duty mercury
switch device to cycle
equipment according to
remote bulb tempera-

tures. Easy to adjust.



L 413 Pressure Controller
Cycles operation by controlling suction line pressure. Holds control point.
No shift even after thou-

sands of operations.



TA 420 Frigistat
A room thermostat for control of refrigeration and cooling machines.
Snap acting contact. Corrosion resistant.



T 420 Frigistat
A mercury switch room thermostat. Ideal for pilot duty. Highly corrosion resistant. Protected by an extremely rugged case.



T 491 Airswitch
Especially useful when
thermostat must operate
under adverse conditions.
Non-corrosive, mercury
switch equipped.

Honeywell Refrigeration Controls

for large-building air conditioning for freezer plant refrigeration for frozen food warehouses for warehouse cooling

Quality standard of the Industry

Pur 'em in-and forget 'em. That's what you do when you equip your installations with Honeywell temperature and pressure controllers, like those shown above.

This is possible only because they go on doing their job for years—requiring little, if any, attention.

There are good reasons for this long-lived service. Better materials and superior design, high standards of production inspection, a control point that doesn't shift, the use of dust-free mercury switches. The controls are built to function as precisely after thousands of cycling operations as they did when new.

From your customers' standpoint the controls are

invaluable. Because they are so dependable they safeguard his investment by protecting against freeze-up—and by ridding him of the worry of a disastrous thaw.

Eloquent testimony to the fact that Honeywell Refrigeration Controls are trouble-free is contained in yearly repair records. Of all the thousands of controls installed, a very minute percentage are ever returned for repair of any kind.

For complete information on the entire Honeywell line of refrigeration controls, call your local Honeywell office. Or write the home office, Honeywell, Dept. CR-5-96, Minneapolis 8, Minnesota.

Honeywell

112 OFFICES ACROSS THE NATION

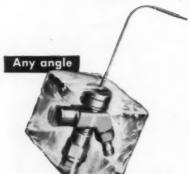


First in Controls



Frigidaire Modulex Valve operates efficiently in any position -even when frozen in ice!





Your best bet for any new or replacement use is the sturdy, compact Frigidaire Modulex refrigerant control valve. It operates accurately anywhere-even in refrigerated space. Withstands complete freezing or unusual heat, because the bulb alone controls the valve, regardless of place or position in which valve is used.

Like all Frigidaire Service Parts, Modulex Valves are made of highest quality material, accurately calibrated and tested at the factory, and warranted for one year.

Call your Frigidaire Distributor. He has a complete line of Frigidaire valves for any commercial application, plus a wide variety of genuine Frigidaire Precision-Built Parts to fill all your service requirements.

FRIGIDAIRE 📸

Precision-Built Service Parts and Accessories

Circle No. 57 on Reader Service Card

Servicemen Acclaim Frigidaire Modulex Valve Performance!

From all over the country come glowing reports on the amazing versatility and accuracy of Frigidaire's remarkable Modulex Valve. Its dependable performance under the most exacting conditions has proven a revelation even to veterans in the refrigeration field.

Here are some enthusiastic testimonials from men who know that their profits depend on getting the job done right the first time.

Far superior to any other make

"We find the MX Expansion Valve far superior to any other make, in performance, reliability and length of service." Paul Haymond

Monongahela Power Company Fairmont, West Virginia

Changed only one valve in eight years

"After 25 years of experience, I have found the Frigidaire Modulex Expansion Valve to be the finest in the business . . . Saves the dealer money on call-backs and adjustments, as well as the customer from irritation and loss of product due to faulty operation. Our experience shows that we have changed only one Frigidaire Valve during the last eight years." Lee Messina

Tulane Refrigeration Co. New Orleans, La.

Really cut call-backs

"We have never had it so good since using Frigidaire Expansion Valves on our jobs and installations. We have really cut our callbacks!" Ralph Hagerman

Santa Monica Commercial Refrigeration, Los Angeles, Calif.

Many outstanding features

Single-bellows operation (fewer moving parts mean trouble-free performance); all-metal, moistureproof construction; self-locking adjusting screw (eliminates frequent readjustment); replaceable needle and valve seat; easily removable filter and self-aligning, stainless steel needle.

Modulex Valves available for every need

Capacities from ¼ ton to 4 tons/Hr. Types for SO2-Freon 12-Freon 22-Methyl Chloride. Nineteen models available . . . all warranted for one year by Frigidaire and General Motors.

USED EQUIPMENT . . .

Continued from page 57

into as many leads for new equipment as if he were looking for them exclusively.

But to get back to the case of the hypothetical trade-in, that \$400 allowance, plus another hundred in the shop to repaint it and put in first class condition, will be sold right away for \$650 to the customer whom Joe had previously lined up.

"Nowadays we never display used boxes," Garza explains, "because in most instances we have them sold before we trade for them. But it wasn't always this way.

"It used to be that we'd show a prospect a used case for which we

THE completely revised 1954 edition of the Design Volume of the Air Conditioning and Refrigerating Data Book has been released by the American Society of Refrigerating Engineers.

This edition contains several rewritten chapters as well as several new ones on the heat pump, absorption systems, steam jet pumps, and abbreviations and symbols. Containing nearly 1000 pages, the book correlates work of 49 outstanding authorities in the industry.

Indexed for easy reference, the volume's refrigeration classified section contains a complete listing of manufacturers and suppliers of materials, components and accessories.

The volume is available at \$7.50 from the American Society of Refrigerating Engineers, 234 5th Ave., New York I, N. Y.

were asking \$650. For all we knew, that prospect was aware that we had had that case on hand for quite a while. And, before he saw the case with any intention of buying it, he had made up his mind he wasn't going to pay the asking price. In buying used equipment, no one pays the first price asked.

"This puts the dealer in a spot. He either has to hike his asking price, with the knowledge he will have to accept less, or he can ask what he wants, and settle for less. Either way, the dealer gets the reputation of being a horse trader. And that's not good.

"But," explains Garza, "the way I handle the deal, my used equipment prospects are aware that I am out

looking for the right box for them
— that I'm trying to locate for them
a case that's a bargain. And so the
greatest part of the prospect's sales
resistance has melted away before
he ever sees the equipment.

"Of course this kind of a program cannot be successfully operated", Garza points out, "without a full measure of customer confidence. All our used equipment is fully reconditioned and carries a one-year guarantee. If we take a fixture in trade that we can't profitably rebuild and sell on this basis, we simply junk it. We will not jeopardize our reputation by selling anything 'as is' and letting the customer take the risk."

SALES MANAGER NAMED

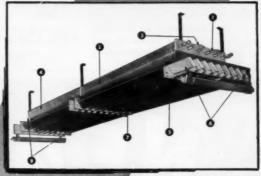
Carleton-Stuart Corp., distributor for Carrier Corp. in New York City and Westchester County has appointed Mort Zimmerman residential air conditioning sales manager for the entire territory.

"some combinations can't be beat!"



Henney COIL AND PAN COMBINATIONS

For it takes a combination—a well integrated team of sound engineering and quality craftsmanship—to produce the most efficient and durable Coil and Pan Combinations. That's why, for either standard or special installations, it pays to 'take it to TENNEY.'



SERVICEMEN CONTRACTORS, JOBBERS, ENGINEERS

Tenney brings you the advantages of advanced ungineering and manufacturing facilities to handle any and every refrigeration problem, for the Tenney line is built to suit your needs. Outline your problem, and let us prove that a Tenney unit will solve it. Tenney En-

Copper-welded connections 2. Super-sensitive fins 3. Electro-tin-plated tubing 4. Mechanically molded bond of facetized fin to tube 5. Louvers of heavy aluminum alloy 6. Scientifically placed louvers for improved air circulation 7. Louvers temperature-equalized to prevent dripping 8. Adjustable pull hook hanger for easy installation and cleaning

Coils And Coil & Pan Combinet
For 6 ft. Wells-in-Codess

Cottom Pan
Cottom Pa

For 10 Pt. Wolf-1-Coolers

| Cot. can Fax
| Cot. can Cot.

A complete range of standard sizes

Special sizes built to order

⊕ 8473



1090 SPRINGFIELD ROAD, UNION, N. J.
Plants: Union, N. J. and Baltimore, Md.
ngineers and Manufacturers of Refrigeration and Environmental Equipment

Circle No. 47 on Reader Service Card

PRODUCE PROFITS . . .

Continued from page 57

obtaining gr_vel from a nearby pit, and by doing a good deal of the work himself.

The building measures 20 by 30 feet with an actual storage floor area of 20 by 20 feet. The roof is flat with two feet of ventilated air space provided over the ceiling of the storage room, reducing the sun effect and refrigeration load. Outside vents provide air circulation in this space.

Walls, floor and ceiling were painted with a heavy asphalt sealer to provide an effective moisture-vapor barrier before studs and insulation were installed. Four inches of fiber glass comprise the insulation. The inside finish of the insulation in the refrigerated room is black asphalted insulation board with edges sealed with hydrolene to protect against moisture loss.

Refrigeration equipment consists of a 2-hp air-cooled reciprocating compressor and two forced air cooling units suspended from the ceiling. The refrigerated storage room is held to about 35° F. Relative humidity ranges from 81 to 92%.

The entire construction job and installation of equipment was completed in about two weeks.

COLLEGES OFFER COURSES ON INDUSTRY TOPICS

Colleges and universities throughout the country are continuing to add technical courses and other aids for the study and development of the air conditioning, refrigeration and heating fields.

The School of Mechanical Engineering of Oklahoma Institute of Technology, Oklahoma A&M College recently offered a 2-day short course on Heat Transfer.

Emphasis was upon heat exchanger theory and design. The course was planned to provide men working in the field with information on these subjects. Dr. Byron E. Short conducted the conference.

Modern methods for air conditioning large office buildings were discussed in the first annual Mario C. Giannini Memorial Lectures recently held at New York University.

Conducted by NYU's Div. of General Education in cooperation with the University's College of Engineering and the New York Chapter of the ASHVE, the lectures were given by six experts in the industry.

Topics covered included central duct systems, unitary and perimeter systems, panel cooling combined with air distribution systems, design problems, the owner's viewpoint, and the future of air conditioning.

THUEMLING TO HANDLE UNARCO EQUIPMENT

Fred Thuemling Co., Milwaukee, Wis., has been appointed sales representative for "Unarco" heating and air conditioning units.

Thuemling Co. was organized five years ago by Fred L. Thuemling, president.

Thuemling will represent Unarco in the middle and eastern twothirds of Wisconsin and Michigan's Upper Peninsula.



Circle No. 59 on Reader Service Card MAY, 1954

HOT COLD

CONDENSATE DISPOSAL UNIT

This completely automatic foolproof unit removes hot or cold condensate fluids from the receiver tank and pumps it to an outside drain. Designed for simple installation in air conditioning units, the Eastern Condensate Disposal Unit offers low operating cost with fully automatic control and quiet, reliable operation. Free specification sheet CD-10 on request.

Eastern

REFRIGERATION CYCLE . .

Continued from page 55

vapor. The liquid in the mixture is evaporated as heat is absorbed, and before it leaves the coil the vapor is superheated about 10°.

Although held to a minimum, there is pressure loss as the refrigerant passes through the coil. This is indicated by the falling away of line AB from the constant pressure line. Additional superheat is added in the heat exchanger with a small additional pressure loss.

Leaving the heat exchanger at B, there is additional pressure drop in

"Yes, Mr. Spelvin, I do believe

the suction line to the compressor which is shown by the line BE. The vapor then enters the compressor at the pressure indicated by point E.

I feel somewhat of a vibration."

Theoretically, the refrigerating pressure and the suction pressure are the same, but in actual practice the suction pressure is always lower than the refrigerating pressure. The suction pressure is always lower by the total amount of pressure loss in the evaporator, the heat exchanger and in the suction line. In a field built-up system it is good practice to allow a 2-pound drop in pressure since the connecting piping is invariably considerably longer than that in packaged units.

The vapor is then compressed from E to C. Since, in this example, a condensing temperature of 105° has been assumed, it will be necessary for the compressor to discharge the vapor at a pressure higher than the pressure corresponding to the condensing temperature to compensate for the pressure losses in the discharge line and in the evaporative condenser.

The loss in the discharge line is shown by the line CF and the loss through the evaporative condenser by the line CD, which shows a constant pressure loss until the refrigerant reaches the saturated liquid state represented by point D at which it leaves the condenser.

Losses in the liquid line would again be along the expansion valve line DA. Pressure drop through the expansion valve is indicated by the line DA and the refrigerant enters the evaporator in a mixed liquid vapor state indicated by point A.

Although this diagram represents the cycle in a self-contained unit with evaporative condenser, it would be similar for a self-contained unit with water cooled condenser. The difference would be in the elimination of the condenser pressure losses and point F would follow the constant pressure line for the 105° condensing temperature with condensing occurring



Here's why . . . briefly!

- Improved heat transfer . . . all refrigerant is in constant movement forward, at "controlled velocity".
- No oil logging or slop over . . . flow of refrigerant and oil is unretarded, free of "traps" and short radii.
- Rapid response to Thermal Expansion Valve . . . no liquid (refrigerant or oil) can accumulate in any part of the Chiller. At each head pass all liquid (refrigerant and oil) is agitated by a constant stream of expanding gas.



Circle No. 60 on Reader Service Card

along this same constant pressure line.

Although a considerable number of effects have been discussed, there are only four actual changes occurring to the refrigerant in a refrigeration cycle. These are: (1) pressure change; (2) temperature change; (3) change in total heat; (4) change from liquid to vapor and from vapor to liquid.

One or more of these changes may occur at any one time and all can be indicated on the Mollier diagram. It is only necessary to determine what the changes are and where they occur to make one of these diagrams for analysis of the system.

SERVEL NAMES HOFFMAN WHOLESALE SUPPLIER

Hoffman Supply Co., Springfield. Mo., has been appointed wholesale supplier of Servel commercial electric condensing units and factory renewal parts in that area.

Harry G. Hoffman is head of the firm, located at 428 North Jefferson St. in Springfield.

DESIGNS EQUIPMENT FOR STAND-BY STORAGE

Surface Combustion Corp. has announced a new adaptation of its "Kathabar" humidity conditioning equipment, designed especially for storage warehouses and war production plants placed in stand-by condition.

The new units represent an effective combination of refrigeration and chemical dehumidification. An air-cooled compressor is used. The condensing coil is located in the leaving air stream, giving the system adiabatic operation.

The new units are compact and because of the adiabatic operation work entirely on electric energy. They do not require the heating of the building in order to maintain 35% relative humidity, even to as low as 20 F.

This new adiabatic system effectively combines the features of refrigeration and chemical dehumidification, increasing the field of application for both.

Low maintenance cost, extreme reliability and no carryover of absorbent are some of the advantages of these units. Because they employ a liquid dehumidifying agent, it is possible to handle more air for the same or less investment. Greater air circulation in the conditioned spaces is thus obtainable.

CARRIER COOLS 10-STORY TOPEKA OFFICE BUILDING

Receipt of a contract to supply cooling equipment for the 10-story Atchison, Topeka and Santa Fe Railroad building in Topeka, Kansas, has been announced by Charles V. Fenn, vice president of the Machinery and Systems Div. of Carrier Corp.

The "U" shaped building, headquarters for Santa Fe's eastern division, is believed to be the largest building in the world devoted exclusively tor railroad operations, with some 300,000 sq.ft. of office space occupied by approximately 2,000 employees.

The order includes a large Carrier centrifugal refrigerating machine and reciprocating water cooling equipment.





BAKERY BUILDS PLANT FOR FREEZING, STORING BREAD

The nation's first major refrigeration plant designed specifically for the quick-freezing and storage of bread products was announced today by Pall Dean Arnold, president of Arnold Bakers, Inc., Port Chester, New York.

Installation of the refrigeration equipment, provided by Carrier Corp. was expected to be completed by mid-April.

The new plant will cost about \$100,000 and will cover nearly 9000 sq. ft., Arnold added. It will provide nearly 12,000 cu. ft. of refrigerated warehouse space in addi-

in two hours after being removed from the ovens, the bread loaves are placed on specially-designed racks in the freezing room and quickly frozen at about minus 20° F. The bread loaves are then packed in cartons and transferred to a holding room at zero degrees to await shipment in refrigerated trucks.

Quick freezing shortly after the bread is removed from the ovens seals in the fresh flavor, and makes possible a much wider distribution of premium breads. Markets within a radius of about 400 miles of Port Chester, chiefly along the Eastern seaboard, are serviced in the regular way, since unfrozen products can be delivered while still "oven fresh."

Outside of this area, the company sells its line of frozen products—eight kinds of bread and six kinds of rolls. They are shipped by refrigerated trucks to distribution cities where, for the most part, they are kept in frozen storage terminals until just before delivery to local stores.

CUSTOMER COVERAGE



DOWNTOWN PHILADELPHIA is dramatically displayed on the 2-color cover of the 36-page customer list compiled by S. S. Fretz, Jr., Inc., Chrysler Airtemp distributor in Philadelphia. Beneath this aerial photo is an impressive list of "prestige" names to which the Fretz organization has sold Airtemp packaged units. This list is broken down into geographical sections of the city. The booklet, listing more than 1800 Fretz customers in all, was produced to aid the firm's salesmen in making still more sales. It is printed in three sections, one for each of the company's sales areas.

tion to the quick-freezing room, a truck bay, office and other work space.

The refrigeration system, according to an estimate by Carrier engineers, will have a freezing capacity in excess of 1,000 pounds of breadstuffs per hour. Refrigerating equipment consists of two stages of compression, and the required air coolers and evaporative equipment.

The basic process consists of slow baking in brick ovens, slicing and double-wrapping bread. With-



WATER REGULATING VALVES . SOLENOID VALVES . HEATING SPECIALTIES

Circle No. 63 on Reader Service Card

and AIR CONDITIONING . MAY, 1954

77

ADDS MODEL TO SMALL BOOSTER PUMP LINE

Bell & Gossett Co. has added No. 150 booster pump to its line of small booster pumps, according to Ralph A. Patterson, general sales manager.

The No. 150 is a 11/2" circulating pump equipped with a 11/2-hp motor and is identical to the company's No. 125 booster in delivery capacity and dimensions, differing only in flange size.

RSES ASSOCIATION HEARS LECTURE SERIES

A "Circuit Tour" series of programs was presented recently to the fire Refrigeration Service Engineers Society chapters which comprise the Upper Midwest Regional Association.

Some 200 listeners in attendance heard John Bergh, assistant service manager of U.S. Thermo Control Co., Minneapolis, Minn. discuss basic design, developments, and operating performances of refrigerated transportation equipment.

DETROIT HOTEL TO COOL **500 GUEST ROOMS**

Detroit's Hotel Sheraton-Cadillac has announced that 500 guest rooms are being equipped with air conditioning.

Each room will have its own Chrysler Airtemp unit which will

FREEZE the Squeeze" may be the slogen used by two shops which specialize in supplying Milady with "foundation garments" which are stocked and stored in Servel's "Wonderbar" refrigerettes. The proprietors of these shops increased sales by storing the latex rubber girdles under refrigeration, since the female form can slip into the chilled girdles more easily than non-chilled variety especially in warm, humid weather.

be part of a central-station air conditioning system designed to provide chilled water for summer cooling and hot water for winter heating. Occupants will be able to regulate temperatures as desired.

The air conditioners will be placed underneath the wide windows for the most effective air distribution.

YORK AGAIN RE-ELECTS ALL CORPORATE OFFICERS

Stewart E. Lauer was re-elected president of York Corp. during the annual meeting of the company's board of directors. He was first elected York's president in 1940.

At the same session the following officers were re-elected: John G. Bergdoll, Jr., vice president and general works manager; John R. Hertzler, vice president and general sales manager; Rodney F. Lauer, vice president, engineering and research; J. Keith Louden, vice president and assistant to the president; Donald M. Magor, vice president and controller; Marshall G. Munce, vice president, trade relations; and William F. Lynne, secretary and treasurer.

S. & R. NAMES PRESCOTT AS CANADIAN REP.

S. & R. Soda Fountain Mfg. Co. has appointed Ray Prescott factory representative in the Dominion of Canada. Prescott will maintain headquarters at Suffern, N. Y.



SAYS WATER TREATMENT PROLONGS COOLER LIFE

Proof that corrosion can reduce costly air conditioning equipment to junk in just a few years was presented by Henry L. Shuldener, president of Water Service Laboratories, Inc., at the opening of a new section of the corrosion research exhibit maintained at the laboratory's New York office.

"Cooling water, circulated through cooling towers, evaporative condensers, and air washers, is even more corrosive than ordinary water, since it repeatedly absorbs corrosive gases from the atmosphere as it is sprayed," Shuldener pointed out. "Spray nozzles with their small apertures are particularly vulnerable to both corrosion and clogging.

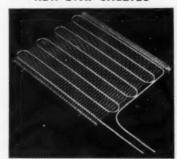
'The problems of scale formation in hard water areas are as serious as those of corrosion in soft water areas," Shuldener continued. "Scale deposits not only clog piping and nozzles, but seriously reduce the efficiency of heat transfer surfaces.'

He emphasized that water problems exist in chilled water circulating systems for air conditioning, in spite of the fact that these are generally regarded as closed systems.

Corrosive or scale-forming makeup water is introduced even in these systems, due to unavoidable leakage.

"Continuous and properly executed water treatment can prolong the life of air conditioning equipment many times over, as it has done to conventional water piping systems," Shuldener concluded.

NEW EVAP SHELVES



EVAPORATOR SHELVES and condensers designed for upright freezers are being manufactured by Union Steel Products Co., Albion, Mich. Engineered for the freezer manufacturer market, these shelves feature steel serpentine tubing within an electro-welded steel wire structure. Can be made to any size, capacity, shape and finish.

CLOW & SONS TO HANDLE AIRTEMP PACKAGE UNITS

Chrysler Airtemp has appointed James B. Clow & Sons, Chicago, warehouse distributors of Chrysler Airtemp "packaged" commercial, industrial and residential air conditioners in northern Illinois, including Chicago.

For 75 years James B. Clow-& Sons have been a distributor of plumbing and heating products in the middle west with particular emphasis on the Chicago metropolitan

According to A. J. Schiffmann, Airtemp regional Manager, the Clow firm has placed commitments for the largest single shipment the company has ever received. Additional orders have been placed for shipment prior to the cooling season.

The Chicago operation will be headed by Gerald R. Kinnally, general manager of the Jobbing Div.

BUY FROM YOUR REFRIGERATION WHOLESALER



YORK

FREDM

it's easy to see why YORK oil is "way out front" in my book!

- York oils are the finest -- for 28 years York has conducted continuous oil research under actual operating conditions in refrigeration systems
- York uses a special process for removing moisture and impurities!
 - York oils are stable in the refrigerating system. This fact has been proven in exclusive stability tests that duplicate actual operating conditions!
 - York was the first to offer a Freon Compressor Oil!
 - York was the first to discover the effect of wax in low temperature Freon systems!
 - More plants have used York 011 for more years than any other brand!

YORK OIL IS AVAILABLE THROUGH YOUR YORK AUTHORIZED JOBBER

IT ALWAYS PAYS TO USE YORK ACCESSORIES AND SUPPLIES

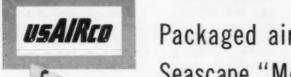
Air Filters . Automatic Controls . Charging Connections . Coils and Piping • Cold Storage Doors • Freen Refrigerants • Gas Masks • Hand Oil Pumps . Ice Cans . Motors and Pumps . Oil . Oil Traps • Purge Devices • Receivers • Renewal Parts • Suction Traps • System Cleaners • Valves and Fittings.

accessories and supplies by york



UARTERS FOR MECHANICAL COOLING SINCE 1885

Circle No. 130 on Reader Service Card for more information



Packaged air conditioners cool Seascape "Motels within a Motel"





6 UsAIRco packaged air conditioners, self-contained water cooled units, cool the five individual guest buildings plus lobby and coffee shop of the Seascape Motel, Miami Beach, Florida. One 7½ hp. unit is located in each of the 10-room guest buildings, while one 7½ hp. conditioner cools the lobby and coffee shop.

usAIRco's unusually flexible packaged air conditioner cleans, cools and dehumidifies the air. The assemblage consists of three component sections—conditioner, blower and plenum permitting rearrangement in the field to fit any problem. All three sections bolt together easily with rubber gasket to insure airtight seal. Spring mounting insures noise-free compressor operation. The central control panel simply flips down to give convenient access to every control.

The cabinet is a handsome modern design of 2-tone baked enamel hammerloid finish with rugged angle iron frame construction, entirely bonderized for longer life. The usAIRco packaged air conditioner occupies little floor space and comes complete with internal water piping, ready for connection to city water supply or cooling tower. The compressor motor is warranted for five years. All other parts carry a one year warranty.

By adding a heating coil, the unit provides effective year 'round air conditioning. The UsAIRCO packaged air conditioner is easily installed, with or without ductwork. In 6 sizes, from 2 to 15 hp., the unit is the ideal application for motels, offices, theaters, stores, beauty shops and restaurants. Contractor for the Seascape installation was George Winston Construction Co. Air Conditioning Contractor was Airko Air Conditioning Co. of Miami Beach.

For complete descriptive Bulletin 77-5 write Dept. CR54

UNITED STATES AIR CONDITIONING CORPORATION

MINNEAPOLIS 14, MINNESOTA . Export: 13 E. 40th Street, New York 16, N. Y.

USARCO 30 YEARS OF AIR CONDITIONING

COOLING

Circulation and Humidity Contro

HEATING



COMMERCIAL



INDUSTRIAL



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RESIDENTIAL

AIR CONDITIONING Section

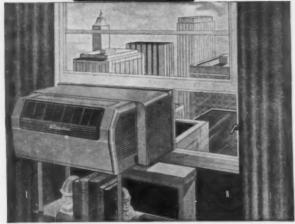
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A room air conditioner utirely inside the glass line!

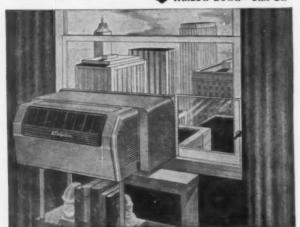
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OFFICES • HOTELS
HOSPITALS
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Window Up-Unit On 📤

Window Down-Unit Off



PERFECTION STOVE COMPANY
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I'm interested. Tell me more.

NOW you can really go after the highly profitable office building, hotel, hospital and motel business with the new Perfection adaptation that ends all the installation and operating problems that have plagued these applications.

- Perfection Adapter Kit "cracks" profitable markets you can't touch with other makes.
 EVEN hotels, motels, office buildings and hospitals are your prospects with Perfection.
- Only Perfection stays"inside the glass line"
 —doesn't disfigure the face of the building.
- This exclusive feature actually simplifies window washing.
- No winter storage problem. Window closes behind unit.
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- Four capacities interchangeable . . . ½ to
 1½ H.P. . . . in identical cabinets.
- Local Perfection Promotion Plan gets you ready-to-buy prospects at low cost.

THIS IS ACTUALLY HAPPENING. A typical building manager, once he's seen Perfection's exclusive Adapter Kit says to his secretary, "Take a letter to all of our tenants saying, 'We are happy to advise you that we can now approve air conditioning for your offices provided you use Perfection or equivalent'."

IT'S AS EASY AS THAT! Why don't you take the EASY way, too?

- 4	YOUR HOME DESE	RVES
Per	fecti	on(a)
	图 6	PORTABLE HEATERS
FURNACES - HOME HEA	TERS - BANGES - AIR CONDITION	IERS - WATER HEATERS

Here's How Doing Your Own Sheet Metal Work Can Pay Off

- by facilitating special fabrication of non-standard forms and fittings which would be difficult to obtain from the average sub-contractor.
- by making it possible to sell a job without the necessity of calling for competitive bids or discussing the installation with sub-contractors.
- by making possible the stocking in slack times of a backlog of duct sections, plenum chambers, fittings, etc., for immediate availability when the rush season begins.
- by offering the assurance of being able to keep promised completion dates, without the danger of having to reschedule operations because of a delay by a subcontractor.
- by making it possible to make changes or adjustments after the installation has been tested, without the cost of recalling the sub-contractor.
- by serving as a sales tool with which to impress prospects by the completeness of your operation and the advisability of single-contractor responsibility.

Control of Sheet Metal Operations Proves To Be a Valuable Sales Tool

WHILE at first glance the cost of operating a complete sheet metal shop may seem slightly higher than sub-contracting this work to outside organizations, over a long-term period such a shop is actually cheaper, according to A. R. Nuckols, head of Nuckols-Cathey Co., mechanical contractors of Waco, Tex.

The Nuckols-Cathey organization, which began as a one-man shop a little more than 10 years ago, has expanded to one of the largest in the central Lone Star State, with many large-scale heating, air conditioning and refrigeration installations behind it. Consistent excellence of the performance of his installations has earned for Nuckols such an invaluable reputation for good engineering that he is constantly called upon for installations in much

larger cities as far as 150 miles distant.

Nuckols-Cathey projects to date have included heating and air conditioning in more than a dozen large churches, half a dozen banks, three major business buildings, and a score of jobs at nearby Connally Air Force Base, huge flight training installation. All of these, of course, have required not only large amounts of sheet metal ductwork but also, in most instances, specialty fabrication which would be difficult to obtain if the job had to be "left up to someone else".

"We got along without sheet metal fabrication facilities until 7 years ago," Nuckols recalls. "At that time we found it practicable to call in competitive bids on installations, or to sit down and discuss over blueprints the proposed installation with several contractors, until we found one who could handle the job adequately.

"Things soon changed a great deal, however, and it was not long before a boom in housing developments plus expansion of the cotton industry, which requires huge amounts of galvanized metal ductwork, made sheet metal one of the dubious elements in accepting heating and air conditioning contracts. After studying the matter thoroughly, we elected to install our own facilities — and we have never been sorry since."

Since 99% of Nuckols-Cathey's installations involve ductwork, even where small heating units or 2-ton air conditioning installations have been used, the firm has found it feasible to maintain a staff of five expert

sheet metal workers, under a fulltime foreman, and to allot some 25% of the shop's space, in the rear of the building, to sheet metal fabrication.

During the rush seasons, the crew is increased to seven men, but there is always enough work to keep at least five busy, the veteran Texas contractor stated.

"Naturally," Nuckols points out, "most of our sheet metal men are talented enough to switch to other types of work whenever the load lightens. During slack periods we build specialized ductwork, plenum chambers, and evaporative coolers, as well as elbows, tee joints, traps, angles, and other fittings, as a backlog for later use."

Well familiar with requirements for every type of heating, air conditioning, and refrigeration contract, from small residential systems up to large factory installations, Nuckols has developed a "minimum inventory" of standard sheet metal items which is maintained at all times. This inventory inevitably becomes badly depleted at the end of each season, of course, and bringing it back up to snuff is enough to absorb two months or more of the shop crew's time.

Sheet metal installations costs are figured by this large dealership on the familiar per-pound cost system. Over recent years, cold figures demonstrate that Nuckols-Cathey's perpound price is anywhere from 5% to 8% higher than if outside contractors were used.

"That sort of figures do not reflect the actual situation, however," Nuckols points out. In the first place, the per-pound cost varies with many types of installations, but we are able to handle odd sizes and unusual designs as easily as more standard ductwork.

"Very important is the fact that while it costs us more to produce the ductwork needed for a major heating or air conditioning job, we can produce it when needed. There is no degree of hesitation over promising a completion date, nor do we find it necessary to reschedule our operations because a sheet metal contractor was unavoidably delayed.

"One of the major savings resulting from the maintenance of our own sheet metal department lies in making adjustments or changes after the installation has been given its trial test. Whereas the sub-contractor would naturally require payment to go back and shuffle the ductwork,

Continued on page 144

Industrial Air Conditioning – A NECESSITY, NOT A LUXURY

ONCE restricted to such specialized applications as textile and printing plants, industrial air conditioning is today a key contributing factor to the efficiency, health and safety of the production employee throughout industry, according to A. B. Waterbury, assistant chief engineer, Walter Kiddle Constructors, engineers and builders.

"There are any number of popular-priced, massproduced items presently on the market that owe their existence to the fact that — somewhere along the line — air conditioning played an important role in the manufacturing process," Waterbury declares.

"Since many machine parts are now made under controlled air conditions, they can be assembled at some common point regardless of where they are produced. Fine and exact tolerances can be maintained regardless of plant location or weather conditions, and there are fewer rejects because of tolerances or corrosion on fine parts due to humidity. Also, laboratory testing and inspection can be based on standardized air and humidity conditions."

Industrial air conditioning can be used successfully to boost the production unit of output per man hour. However, the manner and extent to which it is applied to a specific industrial plant is largely dependent on the type of work.

For instance, according to Waterbury, those who work seated at benches or at small machines, as in assembling small parts, inspecting finished parts or in packaging, require a larger amount of cooling in summer or heating in winter than employees who are

on their feet or move about. It is recommended that for employees seated at tables or benches, average air conditioning during the summer should be about 80 F and 50% relative humidity.

One of the most common causes of accidents at production equipment — outside of sheer carelessness and foolish "kidding around," is the drowsiness induced by repetitive hand movements. The "fresh" atmosphere created by air conditioning has sharply reduced accidents and careless operation.

While high temperature and humidity are an integral part of some industrial processes, it has been found desirable to sacrifice these conditions somewhat in order to obtain better personal comfort for employees. In the glass industry, for instance, it has been found good practice to install air cooled walls to absorb some of the radiant heat.

Where volatile solvent vapors are handled, air conditioning is a necessity from the safety viewpoint. Where there are high concentrations of such gases, good practice requires two or three air changes per minute. If such vapors may be present in explosive proportions, the relative humidity should be increased to 50 or 60%.

In terms of type air conditioning equipment, says Waterbury, the self-contained or packaged unit is gaining favor for two reasons: first, it eliminates the need for costly ductwork; and, second, where the process consists of unit operations it is possible to supply each operation or area with a specific atmosphere from individual air conditioning units.



YOUR SALES WILL SOAR IN FIFTY-FOUR

... WITH THESE NEW MUELLER BRASS CO. PRODUCTS. KEEP YOUR EYE ON CUSTOMER SATISFACTION WITH THIS COMPLETE LINE.





Globe Type Line Valves Straight-Thru and Angle Types

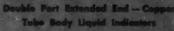


Angle Type Cartridge Drier-Strainer

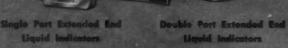


"GUARDSMAN" Drier















Liquid Indicators





Be sure to get details on these new me bors of the great Mueller Brass Co. family of STREAMLINE refrigoration products as well as the addition of many new sizes to some of the present items with which you are already familiar. They're ready new to help you make your sales "sear in fifty-four"! ASK YOUR WHOLESALER.

MUELLER BRASS CO. PORT HURON 10, MICHIGAN

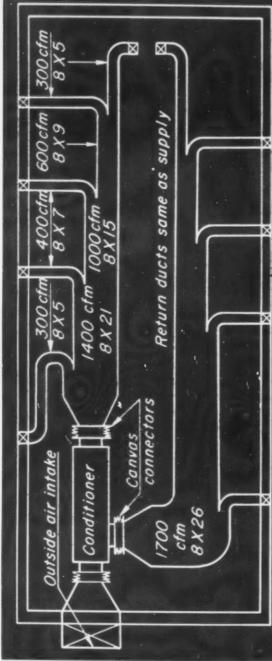
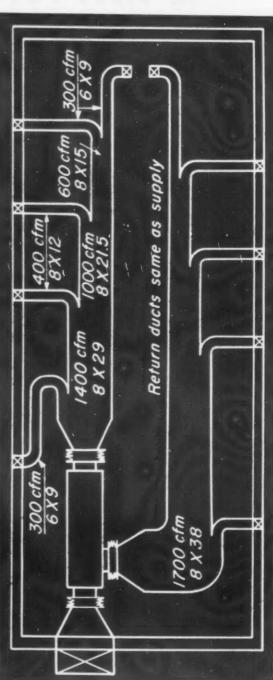


FIG. 1 Conventional duct system sized by velocity method



friction loss method Conventional duct system sized by FIG. 2

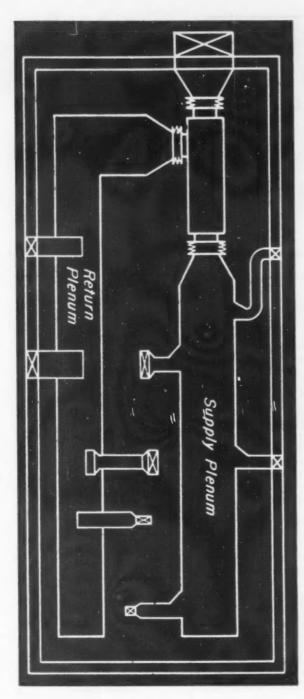


FIG. 3
Typical extended
plenum system

EDITOR'S NOTE: This article is the second in a series of four dealing with air distribution. The preceding article discussed duct design; succeeding ones will cover prefab duct systems and air outlets.

DUCT LAYOUT and FABRICATION

THE previous article in this series described the principles governing the amount of air required for each room or space and the method of sizing ducts to obtain this delivery without exceeding the permissible friction resistance or noise level. In the actual layout there are no hard or fast rules and a choice of either of several types of construction or material may be made on the basis of cost, appearance or performance characteristics.

As a preliminary step, the location of all duct openings should be indicated on a print or drawing of the building, together with the amount of air to be delivered through each.

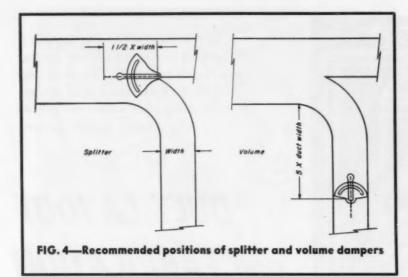
Supply openings may be in the high side wall opposite the outside wall, in the ceiling or, in perimeter installations, under windows of exposed walls. The location of return openings is less critical and they are usually at base level at a point where supply air will not be short circuited into the conditioned atmosphere.

The location of the conditioner, if optional, should be so as to keep duct length and number of elbows and fittings as low as possible.

The outside air intake must be considered, as it may be desirable to make it large enough to handle the entire air supply so that 100% outside air may be used when desired. The location may be specified by the owner or architect, but if a better one is apparent its advantages should be pointed out. Accessibility of power, water and drainage must be considered.

After location of the conditioner and supply and return openings, a line drawing should be made, connecting the openings to the conditioner by the most direct route consistent with good appearance and using fittings readily obtainable in a sheet metal shop or prefabricated for the type of duct used.

The amount of air through each part of the system can be found by adding the cfm through each opening as you approach the conditioner. Air flow through



mains is found in the same manner by adding that through branches where they enter the mains.

Figure 1 shows a conventional system sized by the velocity method. The square feet area of each duct is determined by dividing the cfm by the desired velocity.

Table 3 (see page 80, April issue, COMMERCIAL REFRIGERATION & AIR CONDITIONING) gives usual velocities. Where sound absorbing material is used or where extreme quietness is not required, velocities approaching the maximum in the table may be used. In Fig. 1 a velocity of 1200 fpm was selected for mains and 1000 for branches. The maximum height is assumed to be 8".

Friction Method of Sizing

In this layout the conditioner delivers 1700 cfm, 300 being taken directly from the plenum, leaving 1400 delivered through the main duct. The area of this section will be 1400 ÷ 1200 or 1.17 sq. ft. or 168 sq. in. Dividing by the 3" height, we have a duct 21" x 8".

Other parts of the main and branch ducts are all sized in the same manner, 1000 being the divisor in sizing branch ducts.

Sizing by the equal friction method, as shown in Figure 2, a uniform loss per 100 feet, usually about .125", is selected and ducts sized to have this loss. Using a table such as Table 1 (see page 79.

April issue), the size having the next lower loss may be used.

The return duct carrying 1700 cfm should be a size equivalent to 18" round or 8" x 38" rectangular as indicated by Table 2 (see page 80, April issue). The 1400 cfm section would be equivalent to 16" round and the nearest 8" rectangular would be 8 x 29. The 1000 cfm section would require the equivalent of 14" round or 8 x 21.5 rectangular.

Canvas Connectors Used

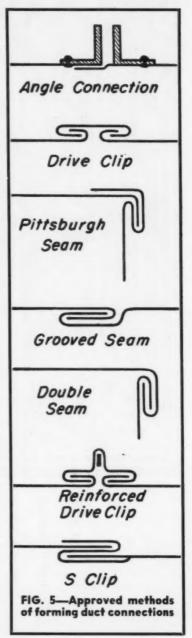
Actually the total loss will be less than .125" per 100 feet of length because the next largest listed size was used where the desired .125" size is not shown. More comprehensive tables and charts published by the American Society of Heating and Ventilating Engineers may be used where more precise dimensions are desired.

It will be noted that the duct sizes by the friction loss method are larger than by the velocity method. This is true in this layout because we assumed sound absorbing construction and high velocity. The velocity through the mains of the system laid out by the equal friction method (cfm ÷ sq. ft. area) are uniformly about 800 fpm, corresponding to the lower velocities of the table.

Canvas or asbestos cloth connectors should be used for all connections to fans and conditioners to minimize sound transmission from motors, fans, belts and other moving parts. Noise can be further reduced by lining a portion of the duct near the conditioner with sound absorbing material.

For a new installation, the dimensions of the duct should be larger where lined so that the inner surface of the lining will coincide with that of the unlined duct. Where installed in an existing duct, angu-

Continued on page 90





I Sell · O·MATIC Heat



I Sell GAS: 0 · MATIC Heat

We All Sell AIR-O-MATIC





EUREKA WILLIAMS Automatic Home n

that means expanded profits for us!



EUREKA WILLIAMS GAS-O-MATIC

EUREKA WILLIAMS AIR-O-MA
Chitomatic

WILLIAMS DIVISION

Eureka Williams

COMPANY

HENNEY MOTOR COMPANY, INC.

We've got new heating and cooling products to show you!

SPACE No. 562

NATIONAL INDOOR COMFORT EXPOSITION Philadelphia - May 16-20

What lies ahead in the way of air conditioning systems for automobiles? Even the engineers who design them aren't agreed on that, but here are some of the latest and most informed opinions on the present and future of . . .

Automotive Air Conditioning Design

TO package or not to package automotive air conditioning units was the question discussed in recent meetings held by the Cleveland, Ohio, chapters of the American Society of Refrigerating Engineers and the Society of Automotive Engineers.

Speaking before the March meeting of the ASRE, P. J. Kent, of Chrysler Corp., described the Chrysler automobile air conditioning system and the problems encountered by automobile manufacturers in connection with manufacture and installation of the units.

Kent predicted 75,000 units will be built during 1954, in comparison with the 28,000 manufactured last year. He further predicted that within 10 years, 1 out of every 10 cars will include air conditioning units.

Price reductions on any large scale will not be possible, he said, until mass production of units is started.

Some of the requirements which shaped the Chrysler design were the determination of capacities, amount of fresh air to be introduced, air distribution systems, and weight placement. Kent added that very few operational difficulties occurred with the units, and that the majority of complaints were in connection with back window fogging, a situation which Chrysler remedied with a special baffle system.

Chrysler is working away from the split condenser system used on its earlier models, because it was found that with the condenser located in front of the automobile's radiator the heated air passing from this condenser caused the car's engine to overheat.

Because air conditioners are completely foreign to most automotive dealers, Chrysler started a training school for dealers and field service men. The field service men in turn trained the dealer personnel. In those cases where this system was not practicable, the dealers work with local refrigeration contractors, according to Kent.

Kent concluded his talk with a description of the advantages and disadvantages of packaged air conditioning systems.

Some of the disadvantages which Kent listed included:

1: Impracticability of moving a packaged unit from car to car, because of the different interior dimensions of the various makes and styles of car.

Packaged units require larger air intakes in order to cool the condenser. These larger air intakes involve a styling problem in the automobile.

3: With all, or most, of the operating machinery placed in the trunk area of a car, the noise level increases to a large degree.

4: If an electrical drive is used, larger generators are needed. If a hydraulic system is employed, a pump driven off the automobile engine is needed, and hydraulic lines and fittings are very expensive, since they require such precision machining. If a flexible cable drive is used, a Continued on page 144

Continued from page 88

lar shields should be installed at both ends of the lining. These should be at an angle of not more than 30 degrees from the main duct.

Where additional sound absorbing material is required, splitters may be used, running parallel with the air stream.

Elbows add resistance to air flow but this can be minimized by proper construction. The minimum inside radius should be at least equal to the duct width. Where sharp bends must be used, curved vanes will reduce resistance and distribute air more evenly. The vanes should have a straight extension upstream equal to half the radius and downstream equal to the radius.

Elbows Add Resistance

Elbows have resistance equivalent to from 10 to 25 feet of straight duct. A square vaned elbow will have resistance equal to 20 feet of straight duct. Resistance is also higher when the ratio of width to depth is large.

Various fittings are necessary to connect ducts of different dimensions, for take-off from main to branch ducts and from horizontal to vertical. The transition should be as gradual as possible. Thirty degrees is generally considered the maximum angular deflection. The area of any section of the fitting must be at least equal to that of the branch to which it connects.

Take-off Fittings Needed

Air may be distributed through main ducts of uniform dimensions throughout their length. Special take-off fittings are made to connect these mains to branch ducts. They may be installed either in the top, bottom or sides and either round or rectangular branches may be used. Figure 3 shows a typical extended plenum layout.

The fittings for extended plenum use must have an area at the opening to the main which is at least twice that of the branch. The ratio of length to width must be at least

Continued on page 131



Sell Low-Price Hot-Water Heating Radiator with MECHANICAL AIR CONDITIONING

*The man with the "know-how"... the man best qualified by installation experience to "cash in" on a market worth millions... is the air conditioning dealer. Installing Air-rad is right up his alley.

Air-rad . . . introduced by Penn Boiler, a famous name in heating . . . is the first perfected hot water heating radiator to provide fully mechanical summer cooling (complete with compressor and coil) at an installed price comparable with that of forced warm air.

In addition, Air-rads give full zone-control . . . both in heating and cooling. They can be installed for heating only . . . and the cooling feature added at any future date . . . without changing a single pipe. Mail the coupon today.

Approved by Underwriter's Laboratories

THE PENN

Air-rad

Made by

PENN BOILER & BURNER MFG. CORP. LANCASTER, PA.



A complete line of oil or gas fired boilerburner units with controls, burners and circulator factory mounted and wired.

Depar	rtment	C			
Penn	Boiler	and	Burner	Mfg.	Corp.
Lanca	ster, P	a.			

Lancaster, Pa.
 □ Send free Air-rad Bulletin and price list. □ Send free Packaged Heat Bulletins and price list.
Name
Firm Name
Address

☐ I am a Jobber

☐ Contractor

A southern contractor demonstrates



REPUTATION BUILDER is the way Max Wright, air conditioning specialist of Atlanta, Ga., describes this direct mail broadside. He prepared this promotion piece, which is printed on both sides, by combining paid advertising and free publicity concerning his firm which had previously been published in local newspapers. The broadside was then lithographed and sent out to the firm's complete mailing list. Additional copies are used for individual promotion of special new prospects developed by the company.

that it's only good business to

Use Your Advertisements Again and Again

THE average air conditioning and heating contractor appealing primarily to business and small industry sometimes finds it difficult to select an advertising medium that will produce returns at a unit cost that he can afford.

And yet he must have some means of creating interest in his services and paving the way for salesmen who may call personally on definite prospects.

Max Wright, head of Max Wright, Inc., air conditioning specialist in Atlanta, Ga., has gone a long way toward solving this vexing advertising and promotion problem by buying a modest amount of advertising space on the industrial and business pages of local newspapers, and then combining these advertisements, and the news stories which often accompany them, into a broadside for sending periodically to a mailing list of commercial and industrial prospects.

Wright says that this program really pays off by helping him to obtain a continuing flow of air conditioning contracts without a large force of outside salesmen.

Because he uses a regular weekly advertisement on the business page of the local paper, the newspaper frequently publishes an article on one of Wright's recent installations, together with one or more photographs of the job.

Recently, Wright combined several of these stories and worked them into a full page advertisement in the local paper.

Then he took this page, together with several other individual stories and filled two full newspaper pages with the material. He had this lithographed, producing a broadside printed on both sides and resembling an actual reproduction of newspaper pages, Each side bore in prominent type the name of Mr. Wright's company and the services it offered.

Wright capitalizes upon some of his more outstanding installations in still another way. For instance, he installed the air conditioning system in one of Georgia's state prisons. Said to be the first air conditioning job in any prison anywhere. This job was unique enough to produce a story in the Sunday feature magazine of the local newspaper.

When it was published, he had this article lithographed and he finds it, too, a valuable mailing piece.

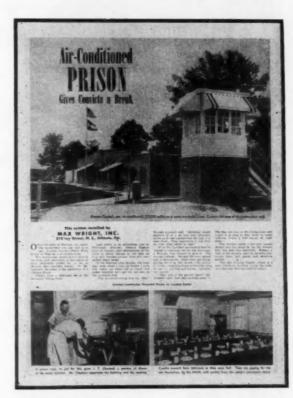
Wright maintains a list of about 10,000 prospects for commercial and small industrial air conditioning installations, and each of these mailing pieces went to the full list.

Wright knows that this method of advertising has

paid off for him, because he received numerous inquiries immediately following each mailing. Now when he calls on a prospect his company already is well known, in large part through the direct mail circulars which he has distributed.

"It is difficult nowadays to find good air conditioning salesmen who will sell commercial and industrial installations the way I want them sold," Wright declares. "This type of advertising helps fill the gap.

"It creates inquiries, and thus a small sales force can follow up the inquiries. The advertising provides us with a list of all the prospects we can handle, and thus we don't find it necessary to ring door-bells in search of these types of air conditioning jobs."



MORE PUBLICITY for Wright's operations is obtained through featured articles in the local press on specific interesting installations made by this firm. The story shown appeared in the Sunday supplement of an Atlanta newspaper. This, too, he had reproduced for further distribution among the firm's prospects.

Only the er lexazone

Central-Plant Air Conditioner Gives you



Flexibility - that's the extra you get with Flexazone! Only Flexazone can be assembled 24 different ways, depending upon available space-in the field: Only Flexazone allows you to add or change zones at any time-in the field. And only Flexazone gives you a choice of horizontal or angular air flow from the plenum. These exclusive features pay off in cheaper installation, greater design-freedom and lower costs-important benefits, whether you're a contractor, architect, engineer, or building owner!



Want to learn more about Flexazone? Write for bulletin C-4.22.

3301 MEDFORD STREET, LOS ANGELES 63, CALIFORNIA

Circle No. 71 on Reader Service Card

USEFUL LITERATURE On Air Conditioning

HEATING AND COOLING EQUIPMENT manufactured by Coleman Co., Inc. is covered in an extensive catalog available from the manufacturer. Operation details, tube and fitting pointers, dimensional drawings, typical installation photographs, cutaway views of the various units, and in general, all you'd want to know about "blend-air" conditioning, floor furnaces, gas wall heaters, water and space heaters and accessories is included in this complete catalog.

Circle No. 131 on Reader Service Card

COMFORT COOLERS with filter sections for air conditioning applications are described and illustrated in bulletin 101-54, available from Tenney Engineering, Inc. Dimensional drawings, construction details, application data, and dimensions in inches are given for the "TWC" units.

Circle No. 132 on Reader Service Card

THE COMPLETE LINE of fans manufactured by Frigid, Inc. are presented in a 12-page bulletin available from the manufacturer. Illustrations of the fans, complete specifications, and dimensional drawings are included. A method of determining correct size for exhaust, circulator, industrial or attic fans is presented. Automatic window and ceiling shutters and blowers are also covered.

Circle No. 133 on Reader Service Card

REGISTERS, GRILLES, and accessories manufactured by General Register Corp. are described and illustrated in a 16-page catalog available from the firm, Catalog No. 101 contains information on the 14 categories in the line, and features units fabricated of hollow metal sections assembled in welded rectangular frames. Engineering data and recommended delivery velocities are included.

Circle No. 134 on Reader Service Card

THE AUTOMOBILE AIR CONDITIONING system manufactured by Kauffmann Air Conditioning Co. is described in a pamphlet presented by the company. Photographs of coil, condenser, and vents are included along with artist's drawings of the complete system as installed in an automobile. Installation details are also given.

Circle No. 135 on Reader Service Card

DATA SHEETS on "Winterline" and "Winterglo" winter air conditioning units are available from Sunbeam Air Conditioner Div., American Radiator & Standard Sanitary Corp. Both gas and oil fired counterflow and gas and oil fired utility units are presented. Ratings and data, dimensions and general descriptions of the units are included along with photographs of the conditioners.

Circle No. 136 on Reader Service Card

(More Air Conditioning Literature on page 96)

MAY. 1954 . COMMERCIAL REFRIGERATION

Now from Century

TWO EASY WAYS TO GET YOUR SHARE OF PROFITABLE MOTOR REPLACEMENT BUSINESS

SELL MOTORS ON SIGHT WITH THIS

Century Silent Salesman



Take advantage of the BIG, constantly growing demand for replacement motors with these and other motors from the Century Line.

MAINTAIN YOUR OWN MODEST STOCK OF Century MOTORS FOR RESALE

- Most often, when folks need a replacement motor, they need it QUICK. You can fill that need—and gain their loyalty—by selling them top quality motors from Century's Complete Line.
- A stock of Century Motors prepares you for profitable replacement business with most makes of compressors, oil burners, blowers, unit heaters, pumps, fans, appliances, and scores of other motor-driven products.
- Free, with your order for only ten Century Motors, you get the
 attractive red and chrome metal display stand shown here. It
 identifies you as the man to see for replacement motors. You'll
 show more motors, sell more motors with this display, in just a few
 square feet of space. Limit of one display stand per customer.

WORK CLOSELY WITH YOUR COOPERATIVE Century SERVICE STATION

- Century's network of service stations is nation-wide. There's one in your vicinity—ready to give you delivery on practically any Century Motor your customers might need.
- Every Century Service Station is staffed by men whose skill you can
 use to solve your motor service problems...men who can help you
 get more profitable motor replacement business.

CENTURY ELECTRIC COMPANY St. Louis -3, Missouri

Offices and Stock Points in Principal Cities

GET ALL THE DETAILS of the CENTURY Motor Selling Plan

... MAIL THIS COUPON TODAY!



	83
CENTURY ELECTRIC COM	PANY
1806 Pine Street, St. Louis 3, Misso	euri
I want all the facts about Century's	motor replacement selling plan.
Name	
Company	,
Address	
City	Zone State

Circle No. 85 on Reader Service Card



4-CONNECTION TRUCK PLATES FOR EASY INSTALLATION

Economical to operate — with uniform temperature assured throughout the trip. May be charged by a self-contained unit on truck, or by connecting to a central system with DOLE special flexible connections. Can carry eutectic solutions ranging from -59° to $+26^{\circ}$.

Available in sizes to fit any application — in standard thicknesses of $2\frac{1}{8}$ " — $2\frac{5}{8}$ ".

Write for Engineering Catalog CE.

DOLE REFRIGERATING COMPANY



5942 NORTH PULASKI ROAD, CHICAGO 30, ILL. 103 PARK AVENUE, NEW YORK 17 In Canada: Dole Refrigerating Products, Ltd. 44 Elgin Street, Brantford, Ontario

Maximum Refrigeration Efficiency

THE COLLINE

Circle No. 73 on Reader Service Card

AIR CONDITIONING LITERATURE . . .

Continued from page 94

SIMPLIFIED HEATING CONTROLS for all oil burners are presented in a 12-page bulletin available from General Electric Co. This 2-color bulletin contains step-by-step installation photographs and provides information on G-E's heating control exchange plan by which dealers can turn in inoperative controls of any make and get factory rebuilt G-E controls in return.

Circle No. 137 on Reader Service Card

PULPIT AIR CONDITIONING equipment is described and illustrated in bulletin 1307 released by Dravo Corp. This four-page, two-color bulletin contains photographs of both ceiling and floor type evaporators, water and air cooled condensers. Separate descriptions on each piece of equipment as well as a general description on the entire unit are contained. Capacities and dimensions for evaporator and condenser sections are also given.

Circle No. 138 on Reader Service Card

FLEXAZONE central plant air conditioners are covered in a six-page brochure presented by Drayer-Hanson, Inc. Data on construction details and operation of the complete air conditioning-heating unit is included. Specifications with fine line drawings, a dimension table, dimensional diagrams and a nominal selection table is also contained.

Circle No. 71 on Reader Service Card

PACKAGED AIR CONDITIONERS are presented in a 12page bulletin released by Worthington Corp. A full-page photo of a packaged unit with all components identified, details on the compressor, dial controls, air circulation, winter climate control, air discharge, and filter area are included with illustrations showing operations.

Circle No. 140 on Reader Service Card

RESISTANCE THERMOMETER BULBS of room temperature, high speed, marine and sanitary types, for temperature spans as narrow as 20 F, are featured in Catalog 5701 available from the industrial division of Minneapolis-Honeywell Regulator Co. Application of resistance thermometer bulbs for commercial air handling systems is diagrammed.

Circle No. 141 on Reader Service Card

HORIZONTAL FORCED AIR gas furnaces are described in a 4-page bulletin released by Norman Products Co., manufacturers of "Southerner" furnaces. Technical construction and performance information is provided. Adaptability to basement or perimeter type heating is illustrated.

Circle No. 142 on Reader Service Card

5 DIFFERENT TYPES OF FANS, including one direction and reversible type window fans, a portable all-purpose fan, exhaust fans, and air circulators are presented in bulletin 347D, available from Baldor Electric Co. Applications are illustrated and specifications and dimensions are listed. An exploded view of the motor assembly is included.

Circle No. 143 on Reader Service Card

(Turn to page 112 for more Useful Literature)

MAY, 1954 . COMMERCIAL REFRIGERATION

SELL

the room air conditioner with the new slim silhouette

It's built by the people who know air conditioning best

> When you mention "Carrier" to a customer, he knows the name. And he knows that it stands for the best in air conditioning. Not in TV sets . . . not in washers not in ranges . . . but in air conditioning.

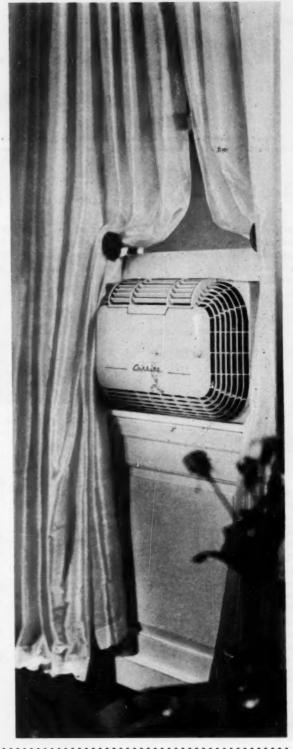
He probably knows that Carrier experience goes back to Willis Carrier's original air conditioning installation more than 50 years ago.

He certainly knows that Carrier has air conditioned most of the world's famous buildings . . . from Radio City Music Hall to the Pentagon . . . from the Capitol to the U. N. building.

There are other reasons to make him want the new Carrier Room Air Conditioner. He (and his wife) will appreciate the new slim silhouette-the graceful, slender profile that scarcely extends beyond the window sill. He'll admire the new adjustable air-flow . . . the new simplified controls . . . the new colors!

And automatic temperature control is furnished as standard on three models.

Isn't that the kind of product and prestige you want to sell?





first name in air conditioning CARRIER CORPORATION, 321 S. Geddes Street, Syracuse, New York

It makes sense to me. Send the name of my nearest Carrier distributor. I want

to sell Carrier!

Name

Circle No. 74 on Reader Service Card

WHAT'S NEW...

in Air Conditioning Equipment

For further information on any of these products, simply circle on the postcard provided in this issue the key numbers of the Items in which you are interested. Your requests will be forwarded directly to the companies concerned.

(For more NEW PRODUCTS turn to page 117)

Air-Cooled Unit

Product: Model 1205 commercial and residential air cooled packaged air conditioner.

Manufacturer: Airtemp Div., Chrysler Corp., Dayton, Ohio.

Features: Applicable to commercial applications and to larger homes, the 5-hp packaged air cooled



unit measures 58" wide, 35" high and 28" deep. Standard 28" deepth allows easy passage through standard door frames. Conditioner can be located outdoors if desired in commercial applications. Air conditioner is designed for use with any one of 6 evaporator coils or evaporator coil-blower assemblies made by Airtemp, depending on the particular application. Condenser blowers can be rotated 90 degrees for air discharge through either the top or side of the unit.

Circle No. 161 on Reader Service Card

Air Cleaner

Product: "Sterishield" space cleaner.

Manufacturer: Baker Co., Maplewood, Me.

Features: Units lowers dust, smoke, pollen, or bacteria content of the air. Unit makes use of 1000 cfm electrostatic air cleaner with its power supply. Propeller fan drives air through the unit horizontally from one end to the other. Unit is mounted on casters for portability.

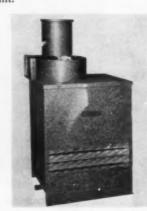


Air cleaner is 33" long, 32" high, 21" wide. Pust collector cell can be easily removed from its compartment and cleaned with running

Circle No. 162 on Reader Service Card

Cooling Tower Line

Product: Small cooling tower line including new 15-ton capacity unit



Manufacturer: Acme Industries, Inc., Jackson, Mich.

Features: Addition of model JACT 15-ton tower (illustrated) fills

line to 5 sizes with capacity range from 3 to 15-tons. Acme has redesigned the entire line to afford maximum efficiency with minimum space requirements. Small cooling towers offers same water saving advantages to small cooling systems that were formerly available only to large installations. Cooling towers in this line are capable of conserving 95% of the water used when no tower is installed. All towers in the line are galvanized after fabrication to make them impervious to extreme weather conditions and suitable for both indoor and outdoor installation.

Circle No. 163 on Reader, Service Card

Time Switches

Product: Series P690 portable plug-in time switches for automatic control of room air conditioners.



Manufacturer: International Register Co., Chicago, Ill.

Features: Switches will control automatically any ½ to 1-hp room cooler. Equipped with 4', 14-gage, 3-wire, type "S" cord with a 3-way grounded, moulded rubber male plug. Model P691 is for 125-volt operation and is equipped with an





Photo Courtesy The Budd Compan

To help assure continuous passenger comfort
THE TRANE COMPANY uses



SOLENOID

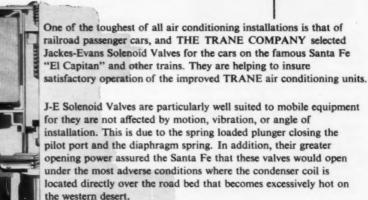
VALVES

in Air Conditioning
Santa Fe Dome Cars
and Coaches



All J-E Solenoid Valves are unconditionally guaranteed for 18 months

- TIGHT SEATING no bubble tolerance.
- SIMPLICITY—only two moving parts.
- . LONG LIFE-cool coils.
- DURABILITY—all corrosionresistant material.
- OPENING PRESSURE DIFFERENTIAL—higher than most others on the market.



The amazingly simple design of J-E Solenoid Valves—only two moving parts—rugged construction and advanced engineering assure completely dependable performance under the toughest conditions. For complete information on how J-E Solenoid Valves can save you time, money and trouble in controlling Freon, brine, ammonia, steam, water, air and gas, call your wholesaler or write.



SOLENOID VALVES THAT SURPASS THEIR SPECIFICATIONS

JACKES-EVANS MANUFACTURING COMPANY

Controls Division: 4427 Geraldine Avenue . St. Louis 15, Missouri

Circle No. 75 on Reader Service Card

adapter plug for use with either a 2 or 3-wire electrical system. A 3-way receptacle universal is mounted on the right side of the case. Model P692 is for 250-volt, 3-wire electrical system, and is equipped with a standard 3-way receptacle. Switches permit "skipping" automatic operation of the switch over week-ends or holidays. Up to 11 on-off operations per day. Timing range is 1 to 23 hours.

Circle No. 164 on Reader Service Card

Automobile Air Conditioner

Product: "Comfort-Aire" universal-type automobile air conditioning unit.

Manufacturer: Hydro-Aire Corp., Waukesha, Wis.

Features: Units are sold as a complete packaged unit which can be installed by local service firms.



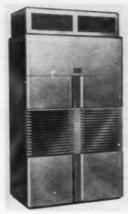
Can be installed in most types of automobiles. Compressor installed under the hood is driven directly by a V-belt from the engine crankshaft. Condensing coil is mounted between the car radiator and front end grille. It does not interfere with normal cooling action of the car radiator. Cooling coils, 81/2 x 91/2 x 23", are easily mounted high in the trunk compartment, sacrificing very little luggage space. Warm air is drawn into the cooling coils through an intake grille located on the package shelf of the passenger compartment. Cooled air is returned to the passenger compartment through a transparent tube, also located on the package shelf. Cool air is channeled across dome of car to mix with normal air before contacting occupants, eliminating drafts completely. Temperature controlled by a thermostatic valve and regulating switch on the instrument panel.

Circle No. 165 on Reader Service Card

Commercial Unit

Product: Unitized commercial air conditioner.

Manufacturer: Koch Refrigerators, Inc., North Kansas City, Mo.

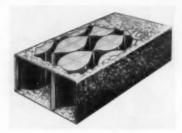


Features: Available in 5 or 71/2. hp sizes. Heating provision is optional. Interior arrangement of the unit was designed by the firm's own service arrangement to insure easier installation and service. Water, drain and electrical connections can be made at either the front or rear. Instant water connections. Oil-less fan bearings. Condensing unit carries a 5-year warranty. Unit available with stainless steel exterior. Sight-glasses, strainer-dehydrators and non-caatter solenoids are standard equipment. Steam coils easily installed from the front of the cabinet, with connections coming out either end.

Circle No. 166 on Reader Service Card

Duct Noise Reducer:

Product: "Aircoustat" addition to ductwork for elimination of fan and air noises in air conditioning systems.



Manufacturer: Industrial Sound Control, Inc., Hartford, Conn.

Features: Standard 7' unit claimed to reduce noise level below

what can be gained through 100' of standard commercial duct lining. Permits silencing of low frequency noise previously impossible to control. Less pressure drop than when entire duct is lined. Units are installed into the ductwork by means of flexible connections. Can be located either between fan and room or above individual air diffusers. Constructed of galvanized steel or aluminum. Fit any ductwork of any design. Special formed-on flanges can be provided if desired. Available in 11 standard sizes for use with different styles, sizes of ducts, and in three types to handle all condition requirements.

Circle No. 167 on Reader Service Card

Conditioner Line

Product: Line of 29 room, residential, and commercial air conditioners.

Manufacturer: Emerson Radio & Phonograph Corp., New York City, N.Y.

Features: Units range from ½ to 3 tons. Room cooler line contains 20 different models ranging from ½ to 1-ton, with 16 models in the "Custom" series and four in the "Compact" series. Six models are available in the residential unit



line, with four 3 and two 2-ton units. In the commercial line are two 3-ton and one 2-ton unit. Compact series contains "install-it-yourself" feature. Units in this series have been designed for five-easystep installation using elementary tools. These models may also be fitted to casement windows, by use of a special kit. Compact series offers two 1/3-ton models and two 1/2-ton models. Deluxe models are provided with thermostats. Custom series (illustrated) includes two 1/2ton units, eight 3/4-ton units and six 1-ton units, each of which contain a sealed-in electrical heating element and a thermostat which controls

McQuay RADIAL UNIT COOLERS

Refrigeration above 35°F

Comfort Cooling



For WALK-IN COOLERS, florist boxes and a wide variety of applications where high humidity is a requirement, McQuay Radial Unit Coolers will give you proved and preferred performance. Also recommended for economical comfort cooling in small offices, shops, and work rooms. Cleanable filters are available as an accessory.

The radial design uniformly distributes air throughout the room. The unit is styled for minimum height and depth to provide more head room. The close fin spacing gives maximum coil efficiency.

In seven sizes from 200 to 870 Btu per degree temperature difference. Equipped with life lubricated motor; Hangers for ceiling mounting; Insulated drain pan; Knockout plugs are provided on either side for connections. Representatives in all principal cities or write McQuay Inc., 1643 Broadway St. N.E., Minneapolis 13, Minn.

Mi Quay INC.



REFRIGERATION
AIR CONDITIONING
HEATING

both the heating and cooling. Residential units are completely packaged. Commercial units have concealed 4-push-button control and an adjustable thermostat. All service connections are made through the rear of the cabinet. Refrigeration system slides out of the base for servicing.

Circle No. 168 on Reader Service Card

Residential Coolers

Product: Models 120, 180, and 250 residential air conditioners.

Manufacturer: Remington Corp., Auburn, N. Y.

Features: Designed as intermediary between conventional window



air conditioners and central systems for conditioning entire homes, these units of 1, 11/2, and 2-hp (illustrated), condition the most used areas of the average home. No cooling is wasted on rooms never used. Air-cooled units can be placed in out-of-the-way spots and with use of a minimum of ductwork can condition the 2, 3, or 4 rooms used the most, Since no water mains needed, wider selection of location is possible. Alteration of home interiors unnecessary enabling ease of installation. Electric power alone is needed for operation.

Circle No. 169 on Reader Service Card

Air Filter

Product: "Far-Air" high-low velocity air filter.

Manufacturer: Farr Co., Los Angeles, Calif.

Features: Filter is 1" thick and is efficient in both high and low velocity air conditioning systems. Filter holds up to 800 grams of standardized fine air cleaner test dust between cleanings. Filter operates efficiently between 800 and 1200 cfm per 20 x 20" panel. When the filter is operated at the higher

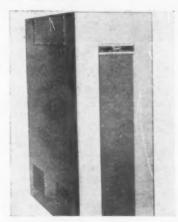


velocity, the face area can be reduced to as little as $\frac{2}{3}$ that required for other types. Herringbone-crimp screen characteristics of other Farr filters have been modified by adding a gabled crimp design to produce maximum efficiency with minimum thickness. Filter loads progressively without critical pressure loss, is easy to clean.

Circle No. 170 on Reader Service Card

Gas-operated Cooler

Product: Model EB-RG "Wonderair" automatic gas cooling unit for addition to existing warm-air heating systems.



Manufacturer: Servel, Inc., Evansville, Ind.

Features: Principal parts of the 2-ton air conditioner are an absorption refrigeration unit, a filter section and a centrifugal blower. Refrigeration system has no moving parts since it employs heat from a small gas flame to circulate the refrigerant through the system. Common distilled water, with a little lithium bromide added as an absorbent, is the refrigerant. Spun-

glass filter section has 500 sq. in. of surface area, is 2" thick. Special fan blades provide large air volume at low speed. Unit needs only 8.7 sq. ft. of floor space, will go through a 30" door. Pre-assembled at the factory, unit is ready for installation upon delivery. Electricity used only for \(^1/4\)-hp motor and controls, no heavy-duty power lines needed. Unit can use all types of gas; natural, mixed, manufactured and liquefied petroleum.

Circle No. 171 on Reader Service Card

Oil and Gas Furnaces

Product: Horizontal oil-fired and "gravity-plus" gas-fired furnaces.



Manufacturer: General Electric Co., Bloomfield, N. J.

Features: Horizontal oil-fired furnace designed for installation where floor space is scarce. Unit may be hung from ceilings, placed in an attic, crawl space, or suspended in the utility room. Completely packaged, easily installed unit will pass through a 28" door. Available in 2 sizes with rated outputs of 60,000 and 85,000 Btu/hr. Model LG15 gas-fired furnace (illustrated) provides gravity heat. Propeller type booster fan provided for quicker heat response, lower floor to ceiling temperature differentials and better temperature control. Fan and limit switch automatically starts and stops the fan, Factory-wired and assembled, furnace is available with inputs of 60,-000, 90,000 and 120,000 Btu/hr.

Circle No. 172 on Reader Service Card

BUY FROM YOUR REFRIGERATION WHOLESALER

Dehumidifier

Product: Dehumidifier which removes up to 24 pints of water every 24 hours, depending on humidity conditions.

Manufacturer: Mueller Climatrol Div., Worthington Corp., Milwaukee, Wis.



Features: Unlike horizontal blow-through type dehumidifiers, this unit pulls in air from all directions at the bottom of the unit, dispels dry air quietly through a diffuser vent at the top. New coil arrangement increases efficiency. Condensate rolls off coils faster. Large reserve capacity, hermetically sealed 1/6-hp compressor. Sealed permanently lubricated motor. Unit on casters for mobility. On-off toggle switch. Large 10-quart condensate collector. Dehumidifier adaptable for automatic drainage if desired. Unit plugs into any AC

Circle No. 173 on Reader Service Card

Room Cooler

Product: "Vornado" ½-hp room air conditioner.

Manufacturer: A. O. Sutton Corp., Wichita, Kan.



Features: Designed for bedroom or small office applications, Model 50 WAC contains "Vortex" control which combines 1500 fpm air movement with cooling to move air up to 30' into a room. Air circulator can be rotated 360° and tilted up or down so that air can be directed to any area in a room. Variable cooling control allows gradual reduction of cooling capacity at settings from 6000 to 4900 Btu/hr, which permits unit to remove up to 21 quarts of moisture from the air on humid days while operating at lower cooling capacities. Unit extends 9½" into a room, can be installed in any double hung sash window from 23½ to 48" wide. Extra wide

spacer panels available for over 48". Sealed refrigeration system guaranteed for 5 years.

Circle No. 174 on Reader Service Card

Unit Heater

Product: Ceiling suspended, gasfired unit heater.

Manufacturer: Westinghouse Electric Corp., Pittsburgh, Pa.

Features: Fully automatic heater operates independently of central



system heating plant, needs only simple electrical, gas and flue connections to put it in operation. Unit can be used with all types of gases: natural, manufactured or liquified petroleum. Maximum heat delivery at lowest noise level is provided by slow speed motor and quiet-operat-



ing fan. Heat exchanger tubes are constructed of corrosion-resistant aluminized steel, and are designed to give maximum heat transfer with minimum air flow resistance. Adjustable louvers provide heat distribution patterns that can be quickly altered to suit specific needs. Seven sizes of heaters provide a range of capacities from 25,000 to 200,000 Btu/hr.

Circle No. 175 on Reader Service Card

Air Conditioners

Product: Line of four deluxe window-type room air conditioners.

Manufacturer: Coolerator Co., Duluth, Minn.



Features: Units available in ½, 1½, and ¾-hp sizes. Space-saver cabinets fit into a window as narrow as 24". Vents located on the front of the cabinet allow draperies to hang flush along the side. Flat-top surface allows venetian blinds to

hang even with the top. Control knobs are located on the front of the cabinet. "Ultra high velocity" air discharge sends cool air directly to the ceiling. Exhaust air is forced out by the blower fan as well as pulled out by the condenser fan. Fully automatic thermostat control is installed as standard equipment. Permanent type filter is easy to remove and clean. Dimensions of cabinet are about 30" deep, 24" wide and 15" high with about 11" depth into room. Cabinet is insulated throughout. Mounted on rubber snubbers for quiet operation. Five-year warranty on "Zerolator" compressor. Unit uses a 3 row fan cooled condenser.

Circle No. 176 on Reader Service Card

Expansion Compensator

Product: "Flexon" expansion compensator for hot water and steam heating systems.

Manufacturer: Flexonics Corp., Maywood, Ill.

Features: Compensator is a phosphor bronze bellows protected by a floating brass shroud which also helps to guide expansion and contraction strokes of the bellows in a straight line. Can be installed in low pressure steam or hot water lines carrying pressures to 40 psi and temperatures to 250 F. Specially designed for finned type convectors, baseboard, radiator or heating supply or return lines. Simple installation. Diameters of 3/4, 1. 11/4, and 2" available. One compensator absorbs expansion for up to 30' of copper tube or 50' of steel pipe. Copper tube end bellows fittings, one male, one female. Silver soldered fittings and electronically sealed joints insure maximum strength and leak-proof life.

Circle No. 177 on Reader Service Card

Water Saver

Product: "Yorktowne" water saver type of evaporation condenser for use with residential room air conditioners.

Manufacturer: Yorktowne Machine Co., Inc., York, Pa.

Features: Water saver uses a rotary jet-type water distributing system which keeps the refrigerant condensing coil completely covered with water at all times, thereby cutting power consumption up to 20%, compared with a standard aircooled unit. Counterflow design using air sufficient to remove heat from the water increases efficiency. Heat is carried off by a 10" round pipe. Maximum of 2% of water required for water-cooled operation is needed as makeup water. Unit is made in two sizes for applications with 3 and 5-hp air conditioners.



The 5-hp unit is 36" long, about 22" wide and 25" high. Dimensions include refrigerant receiver, condenser fan, jet water distributor, pump and necessary valves.

Circle No. 178 on Reader Service Card

Air Diffusers

Product: Line of diffusers for evaporative coolers.

Manufacturer: Ashburn Mfg. Co., Culver City, Calif.

Features: Four sizes available to fit all makes of coolers to 12,500 cfm. Sizes accommodate round pipe with maximum capacities of 14, 18, 22, and 30"; and square ducts with maximum capacities of 16 x 16, 18 x 18, 22 x 22 and 30 x 30". Louvers are reversible if non-vision appear-



ance is desired. One screw at each corner is all that's required for installation. Sponge rubber gasket assures tight fit. Sliding damper panel may be inserted during the winter to block off drafts. Panel stored indiffuser operation.

Circle No. 179 on Reader Service Card



AMERICAN AUTOMATIC ICE MACHINE CO.

1703 FOURTH STREET N. W. . FARIBAULT, MINN.

A Subsidiary of McQuay Inc., Manufacturers of Heat Transfer Equipment Since 1923

RACCA "Qualified Contractor" Program Aired at West Coast Conference

GENERAL agreement with the broad objectives of RACCA's "Qualified Contractor" program was expressed by representatives of organized labor, wholesalers and manufacturers in a panel discussion during the Long Beach (Calif.) Educational Conference.

Whole-hearted backing of the program was pledged by Peter Schuman, top assistant to president Martin L. Durkin of the United Association, AFL union.

A. Starr Hull, executive secretary of the Refrigeration Equipment Wholesalers Association, and Mark Mooney, vice president of Typhoon Air Conditioning Co., Inc. (who pointed out that he spoke for his own company and not for any manufacturers' organization) declared themselves as supporting the general objectives of the RACCA program, but did not pledge any specific type of assistance.

Program Termed Benefit

From their remarks, it was indicated that participation by wholesalers and manufacturers in the program would be on an individual basis.

Terming the RACCA "Qualified Contractor" program a move that "would be of great benefit to the entire industry", Ray Kromer, executive vice president of the RACCA, asserted that "I don't see why the contractors should pay the whole freight for it." He said that manufacturers had been approached for aid in the program, but that so far he did not know what form the assistance might take.

Kromer told the contractors gathered at Long Beach that plans were to develop a procedure under which all monies put up by them for their local programs would be matched dollar-for-dollar by contributions from the national fund.

Contributions by the contractors will be on an individual voluntary basis, Kromer said, but RACCA will strive for local association participation on a 100% basis. He added that some local groups already have signified their intention of signing up on this basis.

A group of 25 or more contractors in any local area could support the full program in their community at a cost of about \$20 per member per month, Kromer said.

In offering the United Association's support of the RACCA program, Schuman said: "If there is one thing that could retard the growth and progress of this industry, it would be poorly trained or unskilled mechanics."

Good Mechanics Needed

"I'm not attempting to suggest who is the most important link in the chain in the growth of an industry," Schuman said, "but a chain is no stronger than its weakest link.

"No customer will continually subject himself to shoddy installation and service work. Training and the use of fully qualified craftsmen can stave this off. In other fields we have seen disastrous results from the placing of too much reliance on 'handy men' rather than skilled workers.

"Apprentice training is the key to low labor costs. The United Association was the first to register with the U. S. Department of Labor its joint apprenticeship training program.

"We offer RACCA our full cooperation and will join with them in a program designed to develop a pool of skilled craftsmen."

In his talk, Mooney pointed up the need for emphasizing attention to corrective and educational measures through local, individual effort, rather than trying to master them on a national scale. The situation he said, is somewhat like the matter of juvenile delinquency, where most of the problems might be solved through correct training at home.

He also described the type of schools and training program off-

ered by Typhoon and other manufacturers, and said that many such schools are not limited to distributors and dealers of firms which put on the school.

Hull stressed the need for close cooperation between major segments of the industry, and told how committees representing various groups work together to try to solve problems affecting the various segments of the field.

He defined the work and area of the REWA wholesaler, and said that the association is busy with programs of its own designed to promote the sale of the industry's products.

Objectives of Program

As outlined by Kromer, major objectives of the "Qualified Contractor" program are:

1. To recruit and train competent sales engineers so that contractors will have an adequate number of qualified representatives to serve the public.

2. To assure that an adequate number of qualified contractors are available to absorb production from existing manufacturers, as well as new ones.

To provide training programs for installation and service mechanics so that their number will be increased to keep pace with increasing sales.

 To upgrade the operation of all contractors to meet RACCA standards.

 To educate the public in the security and safety of doing business with qualified contractors in refrigeration and air conditioning work.

Kromer said that a standard course for training refrigeration mechanics has been developed with the cooperation of the United Association and the U. S. Department of Commerce. This course is designed to give new workers the fundamental knowledge and skill required in servicing commercial refrigeration and air conditioning equipment.

The training committee of each local contractor association will work with the apprenticeship training committee of the local United Association, where there is one, in recruiting and training the number of new men needed. Where no local



... saves us time and money!"

NEW DUTY REPAIR SERVICE 1320 W. HENDERSON STREET CHICAGO 13, ILLIE,OIS

February 16, 1954

Allin Manufacturing Co. 1153 W. Grand Avenue Chicago 22, Illinois

Gentlemen:Profitable servicing in our business requires not only
Profitable servicing in our business requires not only
expert knowledge, but careful scheduling of time. We service
expert knowledge, but careful scheduling of time. We service
expert knowledge, but careful stores and amusement
centers and install and service equipment for manufacturers.

We make it a practice to install a Liquid Eye on all commercial installations. It saves us considerable time and expense by instructing the customer to check it at different times. If there is any indication of a shortage of gas, to call us immediately.

Sincerely, NEW DUTY REPAIR SERVICE (Signed) Al Dellheim

LIQUID EYE®



means

- perfect refrigerant visibility.
- strate-thru flow.
- leak-proof—high safety factor.
- spring loaded gaskets.
- standard wrench flats.
- Instant analysis of refrigerant condition.

Sold by leading Wholesalers. Send for the new Allin pocket-size booklet showing all Liquid Eye sizes and styles

Allin MANUFACTURING COMPANY Chicago 22, Illinois

United Association exists, this training will be done through vocational schools. Correspondence training courses also are being prepared.

A complete kit for guidance in selecting, qualifying and training new men will be supplied to each cooperating local association, Kromer said. Those accepted for training must be sponsored by member contractors or cooperating manufacturers.

In addition to use of local advertising, decals, tags, and other promotion, the public education program supporting the "Qualified Contractor" plan includes an advertising campaign along the same lines as that used by the Electrical Contractors Association to promote its "Qualified" program, and direct mail from national RACCA head-quarters to users and prospects in a specified area, with the names supplied by participating local contractors.

WESTERN RACCA GROUPS JOIN NATIONAL BODY

As a result of RACCA's first regional meeting, held in conjunction with the recent ARI Conference in Long Beach, Calif., local refrigeration and air conditioning contractor organizations in San Francisco and Las Vegas, Nev. have applied for affiliation with the national association, according to Ray Kromer, RACCA executive vice president.

San Francisco contractors voted unanimously to join the national association and to support its programs whole-heartedly, Kromer says.

Las Vegas contractors met, formed their local association and established a dues structure, appointed committee chairmen, and voted to apply for immediate affiliation with the national RACCA group.

In Kromer's opinion, the Long Beach regional meeting was successful from every standpoint, particularly in that it brought closer to members of local associations their stake in and benefit from the various programs that are being developed on a nationwide basis.

BUY FROM YOUR REFRIGERATION WHOLESALER

Unfair To Ask Performance Guarantees From Contractors, Consultant Says

THE use of so-called "murder clauses" in specifications, requiring contractors to give performance guarantees, was denounced by Norman E. Beuter, a past president of the Chicago Association of Consulting Engineers and chairman of the Technical Advisory Committee of the Mechanical Construction Industries of Greater Chicago, in a speech before a recent meeting of the Illinois chapter of ASHVE.

A proposed code of trade practices, now under discussion, is designed to bring about a number of changes, Beuter said, some of which are:

1. Elimination of "Murder Clauses" in Contracts. Bueter pointed out that when responsibilities are placed where they belong, there will be no necessity for such clauses. In fact, a responsible engineer should not expect the contractor to guarantee his engineering or cover up his mistakes.

2. Proper Designation of Responsibilities. The consulting engineer and the contractor each have definite and separate responsibilities which should be understood and set forth. The owner has the responsibility of backing up the consulting engineer.

3. Acceptable Bidding Practices. A definite closing date and time should be established and no bids should be tendered or accepted after the closing time. When the awarding authority issues requests for mechanical bids which stipulate that all said bids be submitted directly to or through the owner, architect or engineer, this procedure shall be strictly adhered to and no mechanical bids shall be processed through a general contractor.

When the awarding authority stipulates that mechanical bids be submitted through the general contractor, the requests for such bids should stipulate that the names of the proposed mechanical subcontractors be stated in and officially considered as part of the bid submitted by the general contractor.

4. Open vs. Closed Specifications. A base bid with alternates is considered fair and practical. The specification should name a definite make of material or equipment but should provide that the contractor may submit a proposal covering substitute products or equipment. The contractor must, however, file his bid based upon the plans and specifications and then state the deduction or addition to be made in case the substitutes are accepted.

5. Standardization of Drawings. One of the primary reasons for consulting engineers turning out inferior drawings and specifications is lack of proper remuneration. Standardization of consulting engineers' fees, similar to the standards set up by the American Institute of Architects, would provide a much needed step in this direction.

6. Standardization of Symbols. In the Chicago area, there has been no standardization of drawing symbols used. In the near future, the committee will publish recommended symbols which all members of the Chicago Association of Consulting Engineers have agreed to use. In answer to a question from the floor, the speaker mentioned that the recommended symbols will be somewhat simpler than those of the American Standards Association.

Bueter denounced free engineering on the part of manufacturers and contractors and also pointed out that such engineering is not free, the costs being simply passed on to the customers. The number of manufacturers and contractors who condone this practice is gradually diminishing, he said.

3 MORE COMPANIES JOIN CHICAGO ASSOCIATION

Three new members have been added to the roster of the Refrig-



We are pleased to announce the opening of our new plant at 1850 Mass-achusetts Ave., Riverside, California. Here, modern production facilities will help us meet the increasing West Coast demand for heat transfer products by BUSH and HEAT-X.

In our expanding industry, it is the manufacturer's obligation to back up his customers... provide them with the delivery and service they require. Our new plant was erected to help us fulfill this obligation.

We are glad to supply these facilities and appreciate the patronage that made them possible.



BUSH MANUFACTURING COMPANY
WEST HARTFORD 10, CONNECTICUT

eration and Air Conditioning Contractors Association of Chicago.

They are: Enterprise Heat & Power Co., (H. A. Naft, H. G. Shaffer); L & G Refrigeration Co. (H. A. Goldschmidt, P. J. Leverence); Mid-West Heat Service (Henry Mauter, Alex Weiss).

ARROW UTILITIES NAMES MINTON AND SHUMSKY

Joseph Minton has been named chief design engineer for Arrow Utilities, and George W. Shumsky has been appointed to head the advertising and promotion departments of the Brooklyn air conditioning firm.

Minton was formerly with S. J. O'Brien Sales Corp. and Shumsky was previously in charge of advertising and promotion for a New Jersey water conditioning firm.

ABANDONED BOXES MADE SAFE BY CHICAGO FIRM

Hinges and locks on abandoned refrigerators and ice boxes will be removed, free of charge, throughout Chicago by television servicemen, according to Carl Korn, general manager of Central Television Services, Inc.

This company is making available, as a public service, its 150 servicemen who blanket Chicago daily, to make safe any abandoned ice boxes which are called to its attention.

Central Television asks the individual who sees any abandoned box simply to phone its dispatcher.

CONDITIONING PRESERVES HISTORIC MONTICELLO

Plans for the year-round air conditioning of historic Monticello, Thomas Jefferson's unique home, near Charlottesville, Va., were recently revealed by Worthington Corp. manufacturer of the air conditioning equipment for the installation. The full project now going on at Monticello is said to be almost as extensive and similar to the work recently completed on the White House in Washington.

The proposed installation is unique in that it is not designed pri-

SCENTS MEAN DOLLARS IN THIS APPLICATION



ONLY A NOSE KNOWS how to correctly recognize and classify different scents, and if the atmosphere isn't kept completely neutral, technicians who blend and sample perfumes are faced with a bewildering confusion of fragrances. In the new Lever Brothers research center, odors are eliminated in the perfume department through clearing of the air every few minutes by filtering it through activated carbon. Connor Engineering Corp. designed the filtering units used in the laboratory.

marily for human comfort but to combat the challenge for preservation of the increasing number of Jeffersonian relics being placed in the building. Any measure of human comfort derived will be a by-product of the prime purpose of humidity control both during summer and winter.

The air conditioning will also help preserve the unfurred heavy masonry walls and timber framing which have suffered from condensation in the summer and frost action in the winter.

The air conditioning equipment will be located in the basement, directly beneath the famous octagonal drawing room. It will provide conditioned air for the first floor public area of the historical shrine and the second floor area.

Prime consideration was given to the interior appearance of the airconditioning system. Supply air grills were completely concealed in order to maintain the original interior decorations intact.

A distinctive feature of the installation is the fact that existing chimneys and the original fireplaces will be utilized in each room for return air circulation and distribution.

Catlett & Johnson, Richmond, Va., agent for Worthington, was the distributor which supplied the equipment.

RECOLD NAMES SANFORD FACTORY REPRESENTATIVE

Sanford Mechanical Equipment Co., Oakland, Calif., has been appointed direct factory representative for Recold air conditioning and heating equipment.

Coordinating their efforts with Wyatt R. Brown Co. of San Francisco, Sanford Co. will serve Refrigeration Engineering, Inc. customers in northern California and western Nevada.

E. C. "Sandy" Sanford heads the firm, and he is assisted by two air conditioning sales engineers, T. R. "Ted" Andrews, and John Poucher.

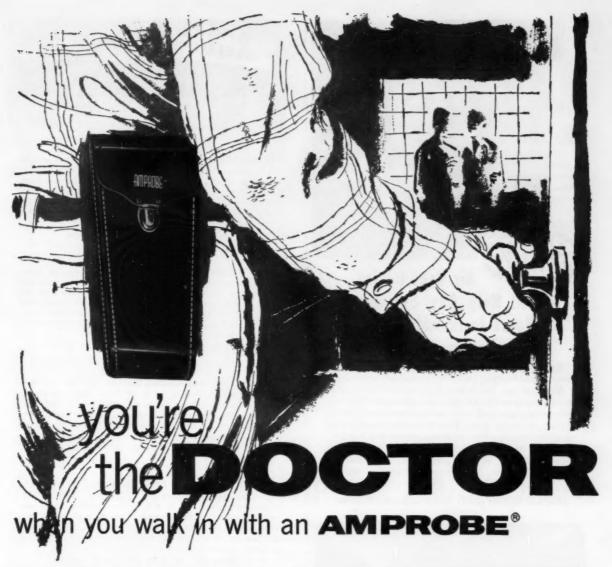
TACO COMPLETES LINE

With the addition of Model HC25, a 2½" circulator, Taco Heaters has announced that the firm now offers a complete line of horizontal circulators from ¾" up and including four sizes of 3" units.

All sizes are now available in bronze as well as cast iron.

NAMES SOUTHWEST REP.

Chas. A. Meyers Co., Houston, Tex., has been appointed southwest territory representative for Standard Refrigeration Co. The firm will cover the states of Arkansas, Oklahoma, Louisiana and Texas.



the Amprobe snap-around volt-ammeter is to the electrician, contractor, plant maintenance man, refrigeration, motor and appliance serviceman.

With an Amprobe, you can measure current instantly without having to shut down equipment. You can measure voltage with instrument accuracy, on a full-size calibrated scale. All this with one rugged and inexpensive pocket-size tool!

Eliminate guesswork, save time and money on practically every call, reduce expensive call-backs, gain respect as a well-equipped professional—
"Amprobe" it! You'll wonder how you ever got along without one.

What the stethoscope is to the Doctor, There is an Amprobe for every job, every budget

AMPROBE Jr.

Now every man can afford to carry an Amprobe. 7 models from 0-10 to 0-100 amps; choice of 0-125/250 er 0-150/600 volt A-C range. \$19.85

AMPROBE 300

The ideal Amprobe model for all-around work. Covers 6 ammeter ranges up to 300 amps, and 3 volt-meter ranges up to 600 volts A-C. \$49.50

AMPROBES 600 & 1200

Similar to 300, but designed to handle extra-heavy loads—up to 600 and 1200 amps A-C respectively. Model 600 is \$59.50. Model 1200 is \$67.50. Write for valuable service bulletins showing how to save time and money with an Amprobe. Mail coupon to: PYRAMID INSTRUMENT CORPORATION. LYNBROOK, NEW YORK.

(Export Div.: 458 Broadway, New York 14).

Send for these free Amprobe service bulletins:

Pyramid Instrument Corp. Dept. CR54. Lynbrook, N. Y.

Please send me the Amprobe service bulletins checked below:

- How to cut costs and land more jobs
- ☐ Trouble-shooting electric motors
- ☐ How to boost service profits ☐ Electrical servicing of hermetic units

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COMPANY_

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AMPROBE snap-around volt-ammeters

Circle No. 82 on Reader Service Card

and AIR CONDITIONING . MAY, 1954



Air Conditioning
Will Help Any Business
(Yours Included) Add-Up
More Profits—

By drawing more trade, getting customers to stay longer, and keeping your staff more alert, more loyal.

Whether you are a distributor or a user, Frick air conditioning will meet your requirements completely. We build packaged units in three sizes, and central systems of many types. Frick engineers are unbiased in recommending the exact equipment you need.

Get in touch with the nearest Frick man today. Branch Offices in principal cities; territories for dealers available. Write now for literature and details to:

FRICK COMPANY, Waynesboro, Penna.



Frick Unit Conditioner, located in a closet, cools two rooms in this motel restaurant. Note air diffusers built into ceiling. Return air is drawn into duct built into fireplace.



Circle No. 83 on Reader Service Card



VALVES, FILTERS, AND DRIERS for refrigeration and air conditioning applications are described and illustrated in a 12- page, condensed catalog released by A-P Controls Corp. Complete product specifications, charts, how-to-select information and other data is provided. New products, improved designs and product model number changes are all illustrated and listed.

Circle No. 145 on Reader Service Card

LIQUID RECEIVERS in both horizontal and vertical types, and single drawn shells manufactured by Electric Auto-Lite Co. are displayed in an 8-page bulletin available from the company. Photographs of the units are included along with complete descriptions and specifications. Available fittings are illustrated and fitting sizes, locations and other pertinent data are presented in tabular form.

Circle No. 146 on Reader Service Card

COMPARATIVE DIMENSIONS between the old and new proposed NEMA frames for 1 to 30-hp motors made by Century Electric Co. are presented in a 6-page folder available from the company. The new frame sizes are printed in easy-to-read red figures, while the odd-sizes are printed in black. Dimensional drawings are also enclosed.

Circle No. 147 on Reader Service Card

HEAT EXCHANGER AND CONDENSER tubes, both seamless and welded types, are described in detail in a 6-page folder available from Babcock & Wilcox Co. Stainless, alloy, and carbon steel tubes are covered. General application data for the different types of tube are included. Specifications and data on various grades, and mechanical properties are presented in tabular form covering two pages.

Circle No. 148 on Meader Service Card

CONDENSERS AND COOLERS, refrigeration compressors, refrigerating units for Freon, ammonia refrigeration compressors, rotary and centrifugal pumps are illustrated and described in a bulletin on equipment for industrial applications released by Worthington Corp. Included are special features, types, sizes and capacities.

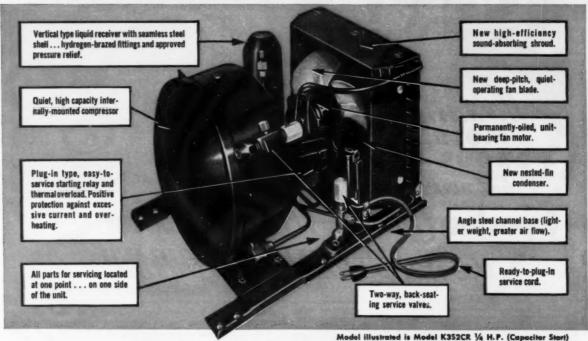
Circle No. 149 on Reader Service Card

A METHOD FOR CALCULATING horsepower capacity of "Texrope" V-belt drives is contained in a bulletin available from Allis-Chalmers Mfg. Co. Belt ratings resulting from the new method take into consideration the effect of belt strength, ratio of diameter of both driving and driven sheaves upon the horsepower rating of the belt, and resultant belt life. Examples are worked out for illustrative purposes. General information on engineering, operation and maintenance is included.

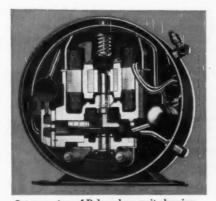
Circle No. 150 on Reader Service Card

(More Useful Literature on page 115)

Know the Inside Story When You Buy a Sealed Condensing Unit...



and you'll buy Kelvinator Polarsphere



Cutaway view of Polarsphere unit showing moving parts, ultra-quiet internal spring mountings, trouble-free design.

... the complete line of INDUSTRY-FAMOUS hermeticallysealed refrigerating units from $^{1/5}$ to $^{1/2}$ H. P. Designed for a wide range of self-contained and remote applications.

It pays to look into the line of internally mounted, hermetically-sealed units with the finest refrigeration mechanism you can buy today. Not only proved superior by Kelvinator's 40 years of experience . . . the amazing Polarsphere record of dependability is unequalled by any other unit. Designed for long-life efficiency . . . it's lighter in weight, yet more than ample in strength for the load; easier to handle than solid-base units; gives a maximum air flow around compressor dome and through condenser. For quiet, trouble-free operation, the pressure-feed lubrication system forces oil to every moving part. For more data, see your Kelvinator distributor, or write Kelvinator, Division of Nash-Kelvinator Corp., Detroit 32, Michigan.

Fill in and stick this coupon to a post card. Drop in the mail today.

Commercial Dept., Nash-Kelvinator Corp., Dept. CR-5 14250 Plymouth Road, Detroit 32, Michigan
Yes, I am interested in obtaining more information about Kelvinator Commercial Condensing Units.
Send complete product data.
☐ Have your representative call.

Name.....Title......

Street Address.

City. Zone State

Division of Nash-Kelvinster Corporation, Detroit 32, Michigan

Manufacturers of Commercial Refrigeration for 30 years

Circle No. 84 on Reader Service Card

THIS ISIT!

The famous

MOLDED

POROUS CORE

that makes the



It is molded of minute particles of a highly efficient desiccant. Then, after complete assembly, it is activated to the highest degree of dryness...a minimum of four hours at over 500° F., then sealed against any loss of activation before installation!

It dries the refrigerant down to an extremely low end point . . . a point so low that any remaining moisture is absolutely harmless!

Its tremendous cylindrical, tri-dimensional, porous filtering area unquestionably offers the only true filtering device capable of filtering out foreign matter as minute as 9 microns with negligible pressure drop.

It cannot powder, it cannot pack, and the refrigerant cannot by-pass it or channel around it.

It removes harmful corrosive acids which cause the most serious problems in refrigeration and air conditioning systems today.

if you want perfectly clean, perfectly dry refrigeration and air conditioning systems buy Sporlan Catch-Alls, the *Perfect Filter-Drier!*

Ask your wholesaler for the Sporlan Bulletin 40-10 today! You'll find Catch-Alls available in progressive sizes from 3 to 192 Cu. in. in flare or sweat connections.

SPORLAN VALVE COMPANY

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EXPORT DEPT. 89 BROAD STREET . NEW YORK 4, N. Y.

Circle No. 72 on Reader Service Card

MAY, 1954 . COMMERCIAL REFRIGERATION

Continued from page 112

SEAMLESS METAL HOSE for flexible metal hose applications is described and illustrated in Catalog 100 released by Cobra Metal Hose Div., DK Mfg. Co. Application data and specifications are included for the high pressure, high temperature and highly corrosive resistant hose manufactured in stainless steel, bronze, monel, nickel and steel.

Circle No. 151 on Reader Service Card

LATEST SELECTION INFORMATION on motor starters and push-buttons is contained in a new publication (GEA-6061) available from General Electric Co. This 6-page, 2-color bulletin provides buying information on a.c. magnetic motor starters (1/6 to 50 hp), a.c. combination starters (1/2 to 25 hp), push-button stations, a.c. manual motor starters, and magnetic reversing controllers. Photos, circuit diagrams and brief application data are included.

Circle No. 152 on Reader Service Card

A SPOT WELDING GUN which welds from one side only and without the need for back-up plates is completely described with illustrations, physical and electrical specifications and operating data in a 4-page folder produced by Air Reduction Sales Co., Div. of Air Reduction Co., Inc. Various applications are listed.

Circle No. 153 on Reader Service Card

ELECTRICAL AND MECHANICAL features of standard and special motors in a quickly visualized chart are contained in a catalog offered by Brook Motor Corp. This selection guide is a feature of the fully illustrated catalog on a line of 1 to 50-hp ac motors in single phase capacitor and polyphase squirrel cage types. A cut-away view shows the components.

Circle No. 154 on Reader Service Card

A 40% INCREASE in horsepower capacity is claimed for Super-Power V-belts over standard belts in a folder issued by Raybestos-Manhattan, Inc. Also included in bulletin 6628 is a complete list of sizes and new belt numbers applicable to the Super-Power belts.

Circle No. 155 on Reader Service Card

LEVELING DEVICES for use with heavy machinery installations to prevent "walking" without having to bolt the machine to the floor are presented in a brochure available from Barry Corp. Describing type LM-3 and LM-5 "Barrymounts", the brochure contains illustrations of installations on heavy equipment.

Circle No. 156 on Reader Service Card

TIME DELAY RELAYS are described and illustrated in bulletin SR-3 available from A'G'A Div., Elastic Stop Nut Corp. of America. This 4-page bulletin features the "Agastat" line of solenoid-actuated, pneumatically controlled relays in two basic types: one with delay beginning when coil is energized; the other beginning when coil is de-engerized. Typical wiring diagrams are included.

Circle No. 157 on Reader Service Card

(See page 94 for Air Conditioning Literature)

Circle No. 86 on Reader Service Card

Your Clue to Quality in Walk-In Coolers

No cooler is better than its cooling system—but when you see the name KOOL-RITE on a refrigeration unit, you can be sure of dependable, money-saving performance.

Famous for long-run service without costly break-downs, KOOL-RITE units meet the requirements of any walk-in cooler made today, heavy or light duty. This unit has high and low side (complete with evaporator and compressor) mounted on a single

panel for ease of installation. Precision control of air flow prevents dehydration. Careful factory testing assures peak efficiency. Self-contained—easy to service.

Like hundreds of other satisfied buyers, be sure you have the best in cooler performance and savings —specify KOOL-RITE.



KOOL-RITE refrigeration units

KOOL-RITE CO.

a subsidiary of

Erickson Industries, Inc. . Roberts, Wis. RITE.





New York's Park Avenue.

Contributing to this luxury are p-k Freon coolers for efficient, economical air conditioning and cold drinking water. At the Waldorf, for example, p-k dry expansion coolers have a capacity of 110 tons of refrigeration for cooling 240 gpm of water from 56°F to 45°F. Each unit fits a space 27 in. x 22 in.

Consider your own cooling needs. p-k can supply the right size, the right type of heat transfer equipment for all cooling applications with a sound guarantee. Why not learn more about the sure savings which are available to you. Full information and engineering help is yours for the asking.



the Patterson-Kelley Co., inc.

350 Burson Street, East Stroudsburg, Penn.

€ 1970 C

101 Park Avenue, New York 17 * Railway Exchange Building, Chicago 4 * 1700 Walnut Street, Philadelphia 3 * 96-A Huntington Avenue, Boston 16 * and other principal cities.

Circle No. 88 on Reader Service Card MAY, 1954

COMMERCIAL REFRIGERATION



For further information on any of these products, simply circle on the postcard provided in this issue the key numbers of the items in which you are interested. Your request will be forwarded directly to the companies concerned.

(For Air Conditioning Products turn to page 98)

Gas-Cooled Compressor

Product: "Coplametic" motor-compressors with suction cooling.

Manufacturer: Copeland Refrigeration Corp., Sidney, Ohio.

Features: Motor-compressors range up through 3-hp sizes. In these models the refrigerant gas cools the motor as it passes through a chamber surrounding the motor. The refrigerant gas does not come



in contact with the oil at any time. Through this design, it is claimed that the motor will not require cooling by water or air. Both motor and compressor are completely accessible for service on the spot if ever required. No belts or seals are used on this direct-drive accessible hermetic. No manual lubrication is needed.

Circle No. 181 on Reader Service Card

Recorder

Product: Model 1000-B temperature recorder.

Manufacturer: Electric Auto-Lite Co., Instrument & Gauge Div., Toledo, Ohio.

Features: Temperature recorder has a 6" clear-reading evenly calibrated chart. Recorder is available with 24-hr, one chart revolution daily, or 7-day, one chart revolution weekly, electric or mechanical chart drive. Standard chart ranges between 40 to 550 F. Model shown has a leather strap handle and capillary tubing on a spool at the rear of the case. Other models



available are 1000-A, bottom connection wall mounting style with brackets, and 100-C, a self-contained portable with a leather strap handle. Recorder encased in an aluminum die-cast case about 7" high, 6½" wide and 3" deep. Recorder available with a cycle indicator.

Circle No. 182 on Reader Service Card

Needle Valve

Product: "PM" series panel mounted needle valve.

Manufacturer: Jas. P. Marsh Corp., Skokie, Ill.

Features: New needle valve can be installed very quickly. Loosened packing nut and first holding nut are easily removed and the threaded stem guide can then be slipped through the panel opening. The first packing nut is then replaced and adjusted, firmly mounting the valve in the panel; assembly is completed with the addition of the packing nut and valve handle. Valves are machined from heavy bar stock steel, are designed for

maximum working pressure of 10,000 psi. Valve stem is of stainless steel, precision machined with fine pitch threads to permit close throttling. Special tailor-made "Marpak" packing produces leak-tight seal



around the valve stem without binding. Valve bodies are marked in accordance with M.S.S. regulations showing size, material, service symbol, and maximum pressure.

Circle No. 183 on Reader Service Card

Frozen Food Case

Product: Model SS 75 AD ice cream and frozen food cabinet.

Manufacturer: Brewer-Tichener Corp., Mt. Vernon, N. Y.

Features: Cabinet defrosts automatically within 6 minutes every 4 hours. Speedy defrosting cycle developed for use in storage of ice



cream which will not soften while this case is being defrosted. Superstructure affords 13 sq. ft. of extra selling display. Case is also available without superstructure, if desired. No plumbing required. Automatic water evaporation removes all moisture resulting from defrost operation, prevents accumulation of water or dripping. Entire refrigeration system with all component parts is accessible from the front for easy servicing. Case has 15 cu. ft. capacity, is 75½" long, 33" deep and height with superstructure is 54". Unit is powered with a hermetically sealed condensing unit using F-22. Cabinet will hold 735 square pints of ice cream, 378 quarts, or 180 half-gallons.

Circle No. 184 on Reader Service Card

BUY FROM YOUR REFRIGERATION WHOLESALER

Ice Maker

Product: Model B-200 2-in-1 ice maker.

Manufacturer: American Automatic Ice Machine Co., Faribault,

Feautres: Ice maker furnishes ice both in cube and crushed ice sizes but does not require an additional crusher mechanism, and purchaser does not pay extra for this feature. To change from cube size to crushed ice size it is only necessary to turn selector switch. Crushed ice size is produced in

uniformly small disk-shaped pieces. Cubes are solid round pieces weighing over 6/10 of an ounce. Ice maker manufactures up to 200 lbs. of ice in a 24-hour period. A 24-

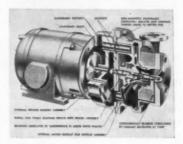


hour storage bin is incorporated in the unit as standard equipment. Unit requires only 6 sq. ft. of floor space, is low enough to permit under the counter installation. Air cooled unit needs only two plumbing connections for installation.

Circle No. 185 on Reader Service Card

Horizontal Pump

Product: Magnetic-drive horizontal pump.



Manufacturer: Peerless Pump Div., Food Machinery & Chemical Corp., Los Angeles, Calif.

Features: Pump has no rotating seals, no packing, no rotating member between the driver and the driven shaft. Complete sealing-off of the liquid end of the pump is accomplished by the magnetic drive. Power is transmitted from motor to pump by the principle of matching magnetic fields from adjacent opposite poles mounted around the circumference of the driving and driven elements. A circular disc, with 12 to 24 permanent magnets is attached to the rotating motor



LOOK TO THE LEADER-LOOK TO PEERLESS

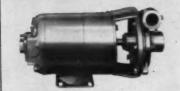
For All Your Needs for END-SUCTION PUMPS

IT'S THE PEERLESS

FOR ALL THESE MODELS

1/4-11/2 hp FACEMOUNT

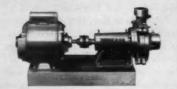
2, 3, 5 hp FACEMOUNT





FLEXIBLE-COUPLED Fractional hp

5-50 hp DIRECT CONNECTED





ALSO CHOOSE PEERLESS FOR THESE **OUTSTANDING MECHANICAL FEATURES**

FLEXIBLE-COUPLED Integral hp



FLUIDYNE LINE CHARACTERISTICS

HEADS: Up to 260 ft. CAPACITIES: 5 to 5500 gpm **MOTOR SIZES:** ¼ to 150 hp

For Reasonable Price-On this count, Peerless scores again! Yes, priced to sell. Quality is best; mass production methods bring you a superior product at a most

For Availability - Peerless has them in stock at Los Angeles and Indianapolis-one pump or a truckload. Peerless can deliver your requirements on time.

Peerless has sold many, many

thousands of these pumps in

all the services shown at the

right, and many more.

For Long Margin: Look to Peerless for the most generous profit margin.

reasonable price.

PEERLESS PUMP DIVISION

It's the Fluidyne Line for ALL THESE OUTSTANDING FEATURES:

FOOD MACHINERY AND CHEMICAL CORPORATION

Address Inquiries to Factories at: Los Angeles 31, California er Indianapolis 8, Indiana Offices: New York; Atlanta; St. Louis; Dallas, Plainview and Lubbock, Texas; Albuquerque; Phoenix; Los Angeles; Fresno

For All Your Air Conditioning Applications

There's One Line of Pumps That Has Been Proved-The Peerless Fluidyne Line. (4) COMMERCIAL AND

THOUSANDS SOLD FOR:

- (1) COOLING TOWERS
- (2) CHILLED WATER SERVICE
- (3) HEAT EXCHANGERS
- RESIDENTIAL AIR CONDITIONING
- (5) BOOSTERS
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Stainless Steel Shaft

(Rust-Proof - Corrosion-Free)

Mechanical Shaft Seal (Leak Proof)

In Models up to 5 hp Type PE In Models up to 11/2 hp Type PB

Bronze Impeller

(Same as used in Largest, Highest Quality Industrial Pumps)

Cast Iron Case

(Heavy and Durable)

Nationally-Known Motor Brands

(Fully Guaranteed)

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FOOD MACHINERY AND CHEMICAL CORPORATION 301 W. Ave. 26, Los Angeles 31, California

Please send me a copy of Peerless Fluidyne Line Pump Bulletin No. B-2300.

COMPANY_

STREET

shaft; this drives a similar size permanent disc magnet and impeller unit which is attached to and rotates around a stationary shaft in the liquid end of the pump. Nonmagnetic diaphragm is used to completely separate the driven end of the pump from the driving end, and leakage is completely eliminated. Pump is an end-suction, horizontal centrifugal type unit. Pump can be operated by motors with 1, 1½ and 2-hp ratings, running at 1760 rpm. Pump size is 1 x 2½ x 8".

Circle No. 186 on Reader Service Card

Truck Cooling Unit

Product: All-electric milk delivery cooling unit.

Manufacturer: Allen Cooler Div., Production Planning Co., Detroit. Mich.

Features: System employs new principle of temperature and overload control. Unit incorporates the General Electric packaged electrical system for mechanical truck refrigeration (see page 104, COMMERCIAL REFRIGERATION & AIR CONDITIONING, February 1954) in addition to an Allen Cooler-engi-

neered overload control valve which works in conjunction with a thermostat for temperature control. Valve furnishes overload control by throttling refrigerant gas flow to compressor whenever either the evaporator pressure or head pres-



sure exceeds normal operating conditions. Temperature is controlled by the thermostat which permits the valve to again throttle the flow of refrigerant to the compressor, maintaining a constant refrigerant temperature in the evaporator. System is never allowed to overload, is always unloaded at starting, and overloading the compressor drive motor and alternator which powers it is eliminated.

Circle No. 187 on Reader Service Card

Automatic Alarm

Product: Type 3-JR-1 "Thermo Alarm" warning against temperature drop in blood banks.



Manufacturer: Mack Electric Devices, Inc., Wyncote, Pa.

Features: Alarm warns when temperatures drop below 3° C or rise above 7° C, permits correction of condition before damage or spoilage can take place. Alarm furnished with waterproof glass cover and mounting cork for a ther-

Let's get the record straight on REMOVING WATER and ACIDS!

McINTIRE

has been doing it for over 20 years

That's why we originally adopted this trademark

OFN

PRYING to low dew point
FILTERING foreign matter
NEUTRALIZING acids



—and not only in laboratory tests, but under ACTUAL REFRIGERATING CONDITIONS

Every DFN drier does exactly what the trademark means . . . Dries—Filters—Neutralizes. This is not a new "claim", but an essential three-way action that users of DFN Driers have enjoyed since we pioneered the first driers.

Every DFN drier charged with the new, patented PERMA-GRAN desiccant provides fast, high-capacity, low dew point drying, plus efficient neutralization of acids. Both inlet and outlet are equipped with straining and filtering media.

DFN driers are made by specialists in drying—subjected to rigid laboratory and field tests—meet highest standards and perform as claimed under actual field conditions.

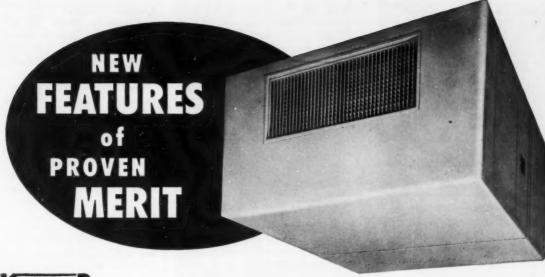
The McIntire Company Livingston, N. J.

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At leading

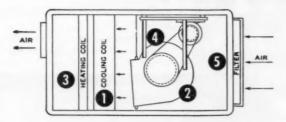
DRIERS . FILTERS . STRAINERS

Circle No. 91 on Reader Service Card



KRAMER

AIR CONDITIONING UNITS



MUGGY-AIR-CONTROL

It "squeezes" extra moisture from the air on muggy days without reheating, dampers or excessive cooling. No short cycling and uncomfortable conditions.



"BLOW-THROUGH" DESIGN

Fan-motor assembly always exposed to normal room temperatures. A unique design with many advantages, resulting in -No motor overload and no loss of bearing lubricant from hot air of the heating coils. No corrosion of fan-scroll assembly from moisture carry-over of the cooling coils.



ANTI-SWEAT CONSTRUCTION

Only a small portion of the casing is exposed to cooled air; that section is heavily insulated.

Access doors and grille have scientific antisweat designs.



QUIET OPERATION

The fans and motor form an integrated assembly independently rubber-mounted to the casing. All moving parts are completely isolated by rubber.



FOR FINISHED INTERIORS

Graceful lines with no unsightly belts, motor and guards exposed to view. Finished in hammer gray enamel.

MANY OTHER OUTSTANDING FEATURES.

WRITE FOR BULLETIN AC-238

KRAMER TRENTON CO. - Trenton 5, N.J.

mostat. Can be inserted quickly in standard 500 cc size containers of the type used in collection of blood by gravity. No batteries to dry out and replace as the unit plugs into any 115 volt ac outlet. Optional at extra cost is the EMT feature, a 250 watt fuse-protected receptacle flush mounted on the control housing for a remote light or buzzer. It is energized simultaneously with the control housing buzzer.

Circle No. 188 on Reader Service Card

Ice Cube Machine

Product: Model LC-40 "Iceboy" ice cube maker.

Manufacturer: Lipman Re-frigeration Div., Yates-American Machine Co., Beloit, Wis.

Features: Ice cube maker affords positive control of the size of the ice cubes. Designed especially for the manufacture of kingsized tips. Any size tip can be frozen in this unit up to 134" in diameter. Standard length of the tip is 23/4". Size of the tip is not affected by temperature or pressure.

When the tip grows to the predetermined size, a microswitch cuts off the freezing cycle and puts the unit on defrost. Defrost is rigidly



controlled by a time clock. An adjusting screw permits setting of the control arm for any desired tip size. All tips are the same size for any one batch. Unit makes between 1000 and 1700 king-size tips per day under normal operations, and stores over 900 tips at one time, Tips have no flat surfaces, will not stick together in storage. Tips are shaped for maximum cooling power. Unit has only one moving

Circle No. 189 on Reader Service Card

Counter-Freezer

Product: Model 700 SC "La Scala" 3-shelf counter freezer.

Manufacturer: 4-Brothers Refrigeration Mfg. Co., Philadelphia,

Features: For all frozen food products, the case is designed for both standard or self-service operations. Full view freezer space extends to the top of the case. Hot gas defrosting system prevents ice from forming on walls or shelves. Either self-contained or remote type units available. Freezers have 4" vapor-proof insulation. Hot liquid line runs through the glass track, prevents sliding glass doors from sticking in the track. Made of No. 430 stainless steel inside and out. Circle No. 190 on Reader Service Card

Solenoid Valve

Product: "Electroflo" solenoid

Manufacturer: Hays Mfg. Co., Erie, Pa.

Features: New piston-type, pilot action solenoid operated valve



A Full-Size Refrigerator And a Full-Size Freezer In One Unit

> from 4.1 cubic feet to 12.5 cubic feet. Self-Contained models operate off a single Lo 100% metal construction, including doors.

Temperature Compressor with necessary control valves. 5 year Warranty on sealed compressor.

• 15 different self-contained and 8 remote control units available to fit any size establishment.

Sold thru Leading Hotel and Restaurant Supply Dealers. Write for Literature.

ard refrigeration section. Freezer section

lining consists of zinc metallized double

wall plates. One adjustable Aluminum

shelf provided in addition to one non-ad-

justable cold plate upper shelf. Sizes range

STAINLESS FOOD EQUIPMENT CO. NEWARK 3,

provides independent moist-cold refriger-

ation at 36° F. by means of Hi-Humidity

Coil. Entire refrigerator section in Stain-

less Steel as are exterior front and both

ends of entire unit. Capacities range from

7.2 cubic feet to 58.3 cubic feet.

provides automatic on and off control of water or air flow. Pilot action provides large capacity, has "anti-water hammer" feature. The solenoid valve is built of non-cor

PATS NEG. CO EDIE, PA

rosive parts and is packless. The valve permits flow only during desired periods. Solenoid valve is now available in \%, \%4 and \1\frac{1}{4}" pipe sizes.

Circle No. 191 on Reader Service Card

Water Cooler Line

Product: "Lectric-Ice" line of water coolers.

Manufacturer: Uniflow Mfg. Co., Erie, Pa.



Features: Stainless steel cabinet is used in the model for offices and stores. Another model for installations that handle a large volume in a short time has a durable brown metallic finish. All models are equipped with the "Toe-Tronic" foot control and are designed to supply up to 14 gallons of ice cold water per hour. Water coolers are powered by a completely hermetically sealed system. Each model has a splash-proof top with the water

height automatically controlled. A refrigerated compartment for storage of food or beverages is contained in the front of the cabinet. Circle No. 192 on Reader Service Card

Liquid Indicators

Products: Five models of "E-Z-See" liquid indicators.

Manufacturer: Remco, Inc., Zelienople, Pa.

Features: Models replace five older models. Type 478 has a 5%"

diameter high pressure pyrex glass tube, made for 5%" o.d. lines. Extended sweat connections are attached by means of swivel nuts for ease of removal and replacement. Models 377-14S and 11S feature positive refrigerant flow through the indicator at all velocities; yet there is no measurable pressure drop. "Flo-indicator" flipper is standard equipment. Distance from sweat connections to gaskets is so great that disassembly is not required. For convenience of those who prefer to disassemble or have



COMES IN THREE SECTIONS

- 1. Basic unit for attaching to present forced air furnace.
- 2. Blower section for furnaces without blowers or if by-pass is desired.
- 3. Plenum Chamber for direct discharge.

Adaptable as a complete self-contained Air Conditioner for stores, offices and shops. Compact — only 55 inches high. Requires only 20"x 20" of floor space. Easily instelled as addition to present heating plant. Efficient — 2 and 3 ton sizes cool 5 to 8 rooms. Trouble-free — precision engineered for perfect performance. Beautiful — swan gray.

MAIL THIS COUPON TODAY!
FOR HANDSOME FOLDER GIVING
SPECIFICATIONS AND INFORMATION

AIR CONDITIONIN

	Central (Plea	se print be			01101
Nome					
Company					
Position					
City			Zona_	Stole	

occasion to make replacement. swivel nuts are used to attach indicator assembly to 45° elbows.

Circle No. 193 on Reader Service Card

Induction Motors

Product: "Life Line-A" induction motor.

Manufacturer: Westinghouse Electric Corp., Pittsburgh, Pa.

Features: Available in three enclosures: totally-enclosed fan cooled, totally-enclosed non-venti-



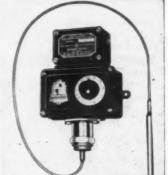
lated, and dripproof (illustrated). Wire, coil, dip, and cable insulations are all new, giving up to three times the life of other insulations without sacrificing dielectric strength. Ventilation system on the

dripproof motor is improved so that the motor can be used both indoors and outdoors. Motor has a 4way bearing seal, with two seals on each side of the bearing. Frames are cast iron. Finishes are corrosion resistant. Motors conform to new NEMA standards for dimensions, are smaller per horsepower.

Circle No. 194 on Reader Service Card

Manufacturer: Partlow Corp., New Hartford, N.Y.

Features: Unit is designed to maintain temperature by controlling the flow of steam, oil, gas or electricity which heats an appliance. It may also be used to regulate coolant flow, to remove heat rather than supply it. It is especially suitable for controlling tempera-

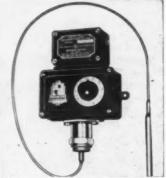


tures where constant visual evidence of temperature is not required. Can be supplied with a calibrated temperature scale which makes it possible to set the control temperature directly on the dial of the instrument. Mercury actuated unit is incased in a heavy cast aluminum instrument case. Unit is available with any of 10 elements covering temperature ranges from -30 to 1200 F.

Circle No. 195 on Reader Service Card

Temperature Control

Product: Model VS non-indicating, explosion proof temperature control.



"My Service-Master saves me up to one hour of lost time ... every day"

REFRIGERATION SERVICE BODY

Here's the body that takes a completely equipped shop to the job, and saves up to 75 minutes per day. Using the latest average service base rate of 6 cents a minute and an average saving of 30 min-

MAKE YOUR PICK-UP TRUCK SERVICE TRUCK, TOO!

These easy-to-install tool and material compartments are finished in baked-on, medium-dark green enamel. Parts bins are built-in. Doors have slam-action catches, with locks keyed alike. Available with overhead rack.

utes a day Service-Master saves s478.00 worth of time a year. Available in sizes for ½, ¾, 1, and ½, ton chassis—regardless of age or make. The coupon below will bring complete details.

for 1/2 and 3/4 ton

pick-up trucks

McCABE-POWERS AUTO BODY CO.	5900 NO. BROADWAY . ST. LOUIS 15, MO.
Please send me complete details on	SERVICE-MASTER SERVICE-TWINS
Name	
Company	
Address	

Circle No. 95 on Reader Service Card

Energizer

Product: Model A-40 energizer. Manufacturer: Pyramid Instrument Corp., Lynbrook, N.Y.

Features: When used in conjunction with a snap-around voltammeter, energizer enables instant current and voltage readings at the

wall outlet. Receptacles are provided for measuring line voltage at the outlet, under actual load conditions, while the appliance is connected to the line. Heavy duty construction increases the capacity to 25 amps for direct readings, and 10 amps for 10x sensitivity read-



ings. Energizer serves as a "split" plug to divide double-conductor line cords at the outlet. It can increase split core ammeter sensitivity by 10 times for precise readings on small appliances and fractional-hp motors. Energizer is plugged directly into the wall outlet. Then the motor line cord is plugged into one of two current reading positions. Current reading is taken by snapping jaws of snaparound volt ammeter through the energizer ring. Voltage readings are taken by plugging voltage test leads into the voltage receptacles on the energizer as illustrated.

Circle No. 196 on Reader Service Card

Vegetable Case

Product: Model 8-VD refrigerated case for vegetables, dairy products or combinations of the two.

Manufacturer: Evans Mfg. Corp., Mt. Vernon, N. Y.



Features: Self-contained with a pull out refrigerating unit, the 8' case has a large refrigerated storage compartment for surplus storage. Full vision glass front shows entire contents. Glass doors can be easily removed during rush hours, if desired. Eye level display allows choosing merchandise without stooping or bending. Case is equipped with adjustable dividers and display racks. Case maintains proper efficient temperature to keep contents fresh and appealing. Interior of the case is illuminated by fluorescent fixtures.

Circle No. 197 on Reader Service Card

BUY FROM YOUR REFRIGERATION WHOLESALER

Capacitor Substitute

Product: "Cap-Subber" emergency substitute for a defective capacitor.

Manufacturer: Sprague Products Co., North Adams, Mass.

Features: Allows immediate restoration of service until a replacement capacitor is obtained. When the rating of a worn out capacitor is not known, the device acts as a rating selector and quickly determines the correct capacitance. Easy to operate, a series of 5 switches thrown in various combinations pro-



vides a substitute for any capacitor from 21 to 648 mf. Complete operating instructions are on the front panel of the device.

Circle No. 198 on Reader Service Card

Condensing Units

Product: Model SCYC packaged condensing units.

Manufacturer: Worthington Corp., Harrison, N. J.

Features: Designed for use in installations where it is desirable



or necessary to install a condensing unit in a location remote from the evaporator. Extremely flexible units are applicable to residential and commercial air conditioning installations as well as in industrial cooling applications. Also suitable for small water chiller installations. Circle No. 199 on Reader Service Card

Ice Crusher

Product: Stainless steel ice crusher for use in Carrier's automatic ice cube maker.

Manufacturer: Franklin P. Miller & Son., Inc., East Orange, N. I.

Features: Gives the user of the ice cube machine the choice of crushed ice or whole cubes. Knob



control enables selection of fine or coarse crushed ice. Machine operates quietly, crushes cubes as fast as they are made. When whole cubes are desired, user turns the knob to shut off the crusher and automatically diverts the cubes to the storage bin. Crusher attaches to the automatic ice cube maker with a few screws, can be quickly installed. Need only connect crusher motor to cuber control before crusher can be used. Crusher is constructed of 18-8 stainless steel, has heavy duty oil impregnated bearings.

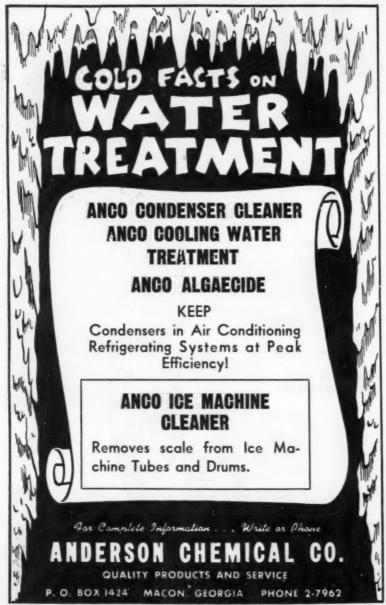
Circle No. 200 on Reader Service Card

Sealing Tape

Product: Kling felt "300" series sealing tape.

Manufacturer: Products Research Co., Los Angeles, Calif.

Features: Tape has a high-tack, one-side adhesive without a separator backing of any kind. Even though the adhesive is very "sticky", it will not adhere to the felt. Elimination of backing material makes the tape easy to unroll and apply. Tape has new felt treating process which gives increased tensile strength, abrasion resistance, and moisture and fungus resistant quali-



ties, while retaining the appearance of soft, raw felt. Tape has good compression and recovery factors and is applicable as a vibration cushioner and weather sealer, especially on doors or panels that require repeated opening and closing.



Tape is available with two types of adhesives: No. 302 pressure sensitive; and No. 313 solvent activated Latter adhesive is recommended for applications on cold or damp metal. Circle No. 158 on Reader Service Card

BUY FROM YOUR EFRIGERATION WHOLESALER **Spray Enamels**

Product: "Broma" spray-itvourself Alkyd enamels.

Manufacturer: Master Bronze Powder Co., Hammond, Ind.

Features: Enamels are contained in hand-size spray cans whose trouble-free performance is assured through a new lower valve assembly specifically designed for paint products. Mounting cup is designed to eliminate cavities and leakage. Removable non-clogging spray head can be easily attached or removed for proper cleaning without damage to the valve assembly. Survey-proven colors were selected as the colors to be packaged in these spray cans.

Circle No. 159 on Reader Service Card

partment while a new batch is being frozen. Storage area is kept separate from the freezing area so cubes can be used without interrupting the freezing process. Unit is equipped with a 1/3-hp hermetically sealed condensing unit. Where



extra-fast freezing is desired, ice cube maker with 1/2-hp condensing unit is available. No plumbing necessary, as an accessible drain is included. Welded steel construction. Smaller model available which freezes 256 cubes every 21/2

Circle No. 160 on Reader Service Card

Ice Cube Maker

Products: Model 3 MCI "Rapid Freeze" ice cube maker.

Manufacturer: Fogel Refrigerator Co., Philadelphia, Pa.

Features: Unit freezes 48 lbs., or 348 cubes, every 3 hours. Cubes, made in 24 quick-release trays, can be transferred to the storage com-

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COMMERCIAL REFRIGERATION

THE COMMERCIAL REFRIGERATION and AIR CONDITIONING

APPLICATIONS MANUAL

by William M. Brewer

Readers are invited to submit their problems to this department. Each letter of inquiry will be answered personally by the aut*.or. All problems should be clearly and completely stated and addressed to: COMMERCIAL REFRIGERATION AND AIR CONDITIONING, Manual Dept., 1240 Ontario St., Cleveland 13. Ohio.

Multi-Zoned Systems Present Many Problems; Here's How You Can Solve Some of Them

TODAY, the heating and cooling of large office spaces for business or professional occupancy very often requires separate temperature-controlled zones for both heating and cooling.

The need for zoned air conditioning systems has been substantiated by the introduction of factory assembled multi-zone fan and coil units by most of the manufacturers of air conditioning equipment.

Basically, the multi-zone units consist of a blower fan in conjunction with a hot deck section incorporating the heating coil and a cold deck section housing the cooling coil. At the outlets of the hot and cold decks there are a pair of dampers for each zone required. One damper in each of these pairs is for the hot deck, the other for the cold deck.

General Operation

When the hot deck damper is open, the cold deck damper is closed. The fan blows the air to the hot and cold decks, and the course of the air over the cooling coil or heating coil is determined by the position of the zone dampers. The positioning of the zone dampers is controlled by room thermostats operating the zone damper motors.

The number of zones per system will vary greatly. One job may only have two zones, while others may require 12 to 15 zones. The more zones required per system, the greater are the problems of control for both heating and cooling.

Naturally the compressor capacity of a multi-zone system must be sized to handle the maximum cooling requirements when all zones are calling for full cooling. Therefore, when only 10% of the zones are calling for cooling the total compressor capacity available is greatly oversized. Varying degrees of this situation occur frequently on multi-zone jobs. From this it can be seen that the compressor operation will be very erratic and that the control of compressor operation will be quite critical.

Compressor Selection

In selecting the compressor for a multi-zone system, therefore, it is very important that some means be provided of automatically adjusting the compressor capacity to meet the varying cooling requirements. One method is to handle the total cooling load with multiple compressors which can automatically kick in and out as the load demands. This naturally is a very expensive solution to the problem.

The simplest and most common solution is to use a compressor which can automatically reduce capacity by unloading individual cylinders. The cylinder unloading is usually controlled by suction pressure.

This feature of unloading cylinders only partially solves the problem of the extreme load variations in multizone systems, however, due to the fact that most compressors can unload to only 25% of their total capacity. Thus, when only 10% cooling capacity is required, the 25% compressor capacity may cause icing of the coil.

To meet this problem, a low limit

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Even the most minute leaks of halide refrigerant gases can't escape this extremely sensitive, leak detector outfit. Just attach to the valve of a lightweight MC acetylene tank. Detached from tank, this unit fits handily into tool box. Ask your jobber for a demonstration. Or write LINDE AIR PRODUCTS COMPANY, a Division of Union Carbide and Carbon Corporation, 30 East 42nd Street, New York 17, N.Y. In Canada: Dominion Oxygen Company, Toronto

FROM YOUR LINDE JOBBER



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thermostat can be installed in the cold deck to stop the compressor when the air temperature of the coil drops to a predetermined setting. This, of course, sometimes results in cutting off the supply of refrigeration when a zone may still require it, but it does eliminate many service prob-

The control of the heating side of multi-zone systems also can become quite a problem, due to the wide fluctuations in heating requirements. For multi-zone systems it is common to control the heating by maintaining a constant hot deck air temperature which is automatically determined by the outside temperature.

It is common practice to use steam for heating and to feed the coil as required by the hot deck temperature through a modulating steam valve. Again, however, when only 10% of the zones are calling for heat the modulating valve is greatly oversized and wide fluctuations in air temperature result.

Zone Control Problems

Also, as the valve modulates toward the closed position, the steam will not feed through the entire length of the coil. Therefore, if the zones requiring heat are at the far end of the coil they will not be satisfied.

This problem can be very troublesome, and usually occurs when steam is being fed through a modulating valve to a long coil (5 feet or more). By using two steam coils and feeding from opposite ends, this problem can be overcome. Also, by using continuously circulating hot water instead of steam, seriousness of the light loading control problem is less-

Many multi-zone applications have internal zones that require cooling the year around. This is due to the fact that the heat gain is from people and lights, with no external exposures for any heat loss. Consequently, the cooling requirements are constant at

During the winter, these zones depend on cooling from outside air at about 60 F. This outside air is controlled by modulating a set of outside and return air dampers from a thermostat in the mixed return air.

Theoretically this gives satisfactory results, but many modern office buildings are constructed so tightly that the outside air introduced has no place to relieve itself to the outside. Consequently, after a certain internal pressure is reached, outside air cannot be drawn into the system, regardess of the damper positions. At this oint the internal zones will overheat, esulting in unsatisfactory control.

In tightly constructed buildings, therefore, it is important to provide either a relief damper to the outside to work in conjunction with the outside air damper, or else a continuous positive exhaust from the conditioned

POINTS OUT PROBLEMS IN X-RAY LAB JOBS

Some reminders for air conditioning and ventilation specialists to consider when installing equipment in hosiptal or office departments of radiology are included in chapter on "Ventilation and Air Conditioning" written by Glenn A. Rogers for the new *Planning Guide* for Radiologic Installations.

The Guide was prepared under the editorial direction of the American College of Radiology, a national association of physicians specializing in x-ray diagnosis and treatment.

Rogers, a member of the Office of Architects and Engineers at the University of California in Los Angeles, points out that:

1. Neither the radiologist nor the architect is expert in the scene of air conditioning, and both must rely on the advice of a mechanical engineer skilled in this field.

2. The radiologist must inform the architects and the mechanical engineer of the functions of the various aspects of his department in sufficient detail to permit scientific evaluation of his respective needs.

3. In hospital departments, the age, physical activity of the departmental personnel and state of health of the patients necessitates a certain degree of flexibility relative to temperature control in the various areas of the department.

4. The temperature for employed personnel within a department should vary between 65 and 72 F. The temperature, however, may be higher, between 72 and 75 F, because many of the patients in the hospital may be clothed in thin cotton gowns.

5. Obnoxious odors are a special problem of hospital departments of radiology - particularly body odor, which is most noticeable in closed fluroscopic rooms devoid of adequate air conditioning. This problem is solved by adequate control of temperature, humidity, and air movement.

DUCT LAYOUT ...

Continued from page 90

3 to 2 and the long side must run lengthwise with the main duct. Fittings must not be spaced closer together than 16".

Dampers should always be installed in branch ducts for the purpose of balancing or changing air flow when conditions change. Splitter dampers are more effective than volume dampers in conventional installations. The vane should be about 1½ times the width of the branch duct.

Splitter dampers can increase the air flow through the ducts they serve

ADMIRAL Corp. reports that it sold more room air conditioners in Alaska than in San Diego, Calif. and Jacksonville, Fla. during the first three months of 1954. According to Clarency Tay, general manager of branches, the latest order from William W. Winkels, general manager of Admiral Distributors, Inc., Alaska Div., put the Territory ahead of both Jacksonville and San Diego in unit sales thus far this year.

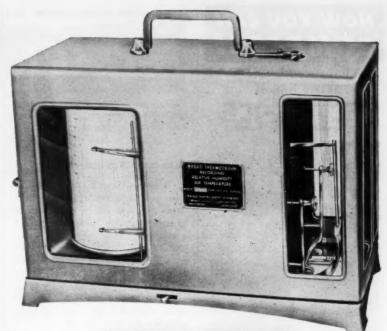
"Some of the air conditioners were shipped air freight collect at the customers' request," Tay said. "This added about \$70 to the cost of each unit.

"Our experience in Alaska this winter should prove that air conditioners are sold not only in localities that experience high temperatures and humidity."

by deflecting some of the air from the main into which they extend. Dampers should always be installed with quadrants to fasten the blades in position and indicate their positions. Figure 4 shows correct positions for both splitter and volume dampers.

Volume dampers are used in branches from extended plenum systems, in risers, and occasionally in conventional systems. They have the disadvantage of causing turbulence and noise as air rushes around the ends of the vanes. They should not be placed near discharge openings and be at least 5 times duct width away from the junction with the main.

Ducts not exceeding 12 inches on either side are usually constructed of 26-gauge metal, from 13 to 30



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"A Leader In The Water Cooler Field For Over 20 Years" Circle No. 105 on Reader Service Card inches of 24-gauge, and over 30 inches of 22-gauge.

In order to prevent noise due to movement of duct walls, those exceeding 24 inches should be braced with angle iron at distances not exceeding 4 feet from reinforced drive cleats which should be used to join the sections. The angle iron is riveted to the outside of the duct and may be used to fasten the supports.

Aluminum Has Advantages

Galvanized iron has long been a most popular material for duct construction. Aluminum is increasing in popularity and possesses several advantages. It is inherently corrosion resistant, light in weight, and resists heat transfer by radiation. The cost is somewhat higher than galvanized but the much lower shipping weight and cost may result in an installed cost comparable to galvanized.

All seams and connections should be made tight and, where mechanical strains are possible, should be of the self-locking type. Figure 5 shows some of the common types of seams and connections.

Seam Treatments Vary

Round pipe is usually rolled and fastened with a grooved seam. Rectangular dact is formed by breaking the corners and forming a grooved seam lengthwise. The Pittsburgh seam is usually used for the corners of elbows and other fittings. The duct sections are joined by S, or drive clips or angle connections.

Much or all of the duct material for a residential or commercial type installation may be purchased in a prefabricated and often in a knocked down assembly which can be quickly put together on the job. The fittings are few in number and standardized so that very few different items need be stocked.

Even the conditioner housing can be so built, with only flat sheets to be cut to size. Prefabricated duct is available in both metal and nonmetallic materials.

The application of these materials to some typical and some unusual installations is to be the subject of an article to follow.

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Circle No. 104 on Reader Service Card COMMERCIAL REFRIGERATION

METAL AIR CONDITIONER SHIELDS MADE BY FLORIDA FIRM

SHIELDS for weather protection and increasing the appearances of window air conditioners are made in two parts, the first for ordinary protection and the second for extreme weather protection.



A protector shield for air conditioning units, which serves several other uses besides its application for weather protection, has been developed by Mahoney Air Conditioning Service of Miami, Fla.

The welded, 24-gage steel shield fits around the portion of air conditioning units which protrude outside the wall. The unit is made in two sections. The first is fastened to the outside wall with lugs and is caulked for a weather-tight fit. This remains in place at all times and while affording some protection against weather, its prime purpose is to enhance the outside appearance. When painted to match the wall color, it is hardly noticeable.

The shields are 6 to 8" deep and have 40 louvers, 3" wide on each side. Outside dimensions are about 18 x 40" which leaves ample room for ventilation around the conditioner as well as in front, where a removable door covers the grille.

This removable door, the second portion of the shield, is only in place during the season or weather conditions when the air conditioner is not in use. The door is easily slipped in place affording protection against weather during winter months.

Ordinarily, when a window unit is removed for servicing, a gaping hole is left where the unit sat in the window, permitting insects and rodents easy access to the interior of homes. The shield, while not interfering with the removal of window units, does provide this protection while the unit is out. Additionally, the shield eliminates wall stains caused by condensation drippings by having holes at the outer edge of the shield's bottom.

49 HEAT PUMP UNITS USED IN FLA. MOTEL

A multiple installation of 49 "Weathertrons", General Electric Co.'s heat pump, will provide allelectric year-round air conditioning in the Belmont Park Motel constructed in Miami Beach, Fla.

Described as one of the largest and most beautiful of its type, the luxury motel will consist of 22 one-story buildings, each of which will contain 10 living units, all completely air conditioned. It will include four administration buildings, two full size swimming pools, a complete restaurant and cocktail lounge.

The living units will be laid out to provide complete and private accommodations for a party of any size. Each unit will have television, 24-hour phone service, a large walkin closet, private bath, and kitchen facilities.

The G-E Weathertrons are being installed by Mechanical Contractors Supply, Inc., Winter Park, G-E distributor.

FIRM CHANGES NAME

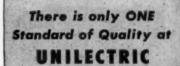
Jim and Ned Marshall, manufacturers representatives in the Denver, Colo., area, have changed the name of their firm from Navajo Agents to The Marshall Co.

The firm, which will continue as representative for Madden Brass Products Co., covers Colorado, New Mexico, Arizona, Utah, Wyoming, Idaho, Montana, Kansas, Nebraska, and the western parts of Missouri and Iowa, as well as El Paso, Tex.



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Neat and trim . . . a modern beauty in good taste.

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Get the facts NOW-write DISTRIBUTORS-DEALERS LOMBARD MFG. CO., Youngstown, O.



LETTERS

Explaining Differences in "Hermetic" Units

We have studied with great interest the statistics of your 1954 specifications of packaged air conditioners, as presented in your March issue. This will be extremely useful to us as a basic data for a survey we are conducting to determine the growth potential of motors for hermetic compressors. To clear up some confusion in our minds will you please tell us how a semi-hermetic and an accessible hermetic each differ from a true hermetic compressor.

> ELWOOD T. BAKER General Electric Co. Schenectady, N. Y.

EDITOR:

Referring to your March issue and the special section on air conditioning specifications, I find this very confusing when referring to compressor

It seems the word "hermetic" is used very loosely. To my knowledge, York and General Electric have "hermetic" units; and Chrysler Airtemp, Carrier, and others have similar "her-

metic" types. If this word "hermetic" can be defined more clearly to me, and I am wrong in my conception of same, I will be happy to order a number of

copies of this special section.

E. L. MERCHANT U. S. Sheet Metal & Roofing Co., Inc. Evansville, Ind.

The term "hermetic", as used in our industry, applies to a unit which has the compressor and motor encased in the same housing or shell. In the fully hermetic units this shell is welded or brazed shut so that it cannot be opened for field servicing, except through the use of special shop equipment.

A number of manufacturers, in recent years, have developed condensing units which incorporate the same principle as the fully hermetic units, but which are so arranged that they can be opened, if necessary, for servicing in the field. These units are generally referred to as "semi-hermetic" or "accessible-hermetic".

Carrier 51Q3 Has 3/4 HP Compressor

EDITOR:

In your very fine March issue you have apparently made a typographical error in describing the compressor on the 51Q3 as a ½ horsepower size. It is, of course, a ¾.

We would appreciate any correction that you might see fit to publish, since we are already getting questions from our customers about this.

> D. W. Hoppock Carrier Corp. New York, N. Y.

Many thanks for calling our attention to the typographical error that we made in describing the compressor on the 51Q3 Carrier unit in our March issue. We are publishing a correction in this issue.

Heat Pump Capacities Transposed by Mistake

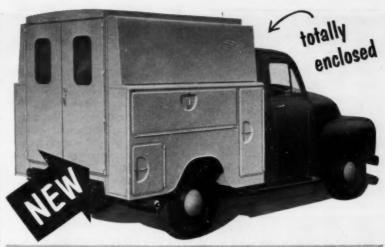
EDITOR:

We have noted an apparent error in the specifications section for 1954 packaged air conditioners, page 130. The Westinghouse heat pump, HP-5, is shown as having a cooling capacity of 32,500 Btu/hr. We would appreciate your letting us know the correct rating of this heat pump.

W. F. APPLETON Tennessee Valley Authority Chattanooga, Tenn.

The figures for the HP-3 and HP-5 units were inadvertently transposed. Correctly, the heating and cooling capacity should read as follows: for the HP-3 unit, cooling capacity 30,000 Btu/hr; heating capacity 32,500 Btu/hr. For the HP-5 unit, cooling capacity 50,000 Btu/hr; heating capacity 54,200 Btu/hr.

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Also Manufacturers of MOR-SUN Furnaces and ROLY-DOOR Steel Garage Doors.

Literature on request.

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ABOUT PEOPLE . . .

Continued from page 43

test facilities and will also serve engineers throughout the corporation as a consultant on laboratory facilities and instrumentation design.

William A. Matzke has been appointed valve sales representative in Washington and Oregon for Ohio Brass Co. Affiliated with Matzke in serving that territory will be his sons, William A., and Robert J. Matzke.

Appointment of R. C. (Bob) Starke as a district representative for Remington Corp. in the mountain states has been announced by M. L. Judd, general sales manager. Starke will represent Remington room air conditioners in Colorado, Utah, and New Mexico, with head-quarters in Denver.

William Hall has been appointed sales representative for Eskimo Cooler Corp. in the state of Michigan. Hall will have charge of sales for ice cream, frozen food and dairy case merchandisers.

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17

A. S. Marlow, Jr., and W. A. Boone, executives in Bell & Gossett Co.'s sales department, have been elected directors of the company by shareholders at the annual meeting. At the board of directors meeting following the shareholders meeting, Marlow was elected a vice president of the company.

Charles V. Bengle has been appointed manager of the applied sys-



tems section in air conditioning and refrigeration at Worthington Corp.'s Harrison, N. J. plant. Bengle joined Worthington in 1942 as an application engineer.

He has served since then as air conditioning and refrigeration district representative in the Cincinnati, Nashville, and Detroit offices.

E. F. Dill has been promoted to manager of the Seattle sales office of Minneapolis-Honeywell Regulator Co. He formerly was branch commercial sales manager in the San Francisco office. At Seattle, he succeeds W. G. Warrington who has resigned to become vice president and general manager of Rossoe Mfg. Co. R. J. Conner has been named to succeed Dill as branch commercial sales manager at San Francisco.

Stanley Luke has been appointed president of Coolerator Corp., Div. of IT&T, and H. C. Beresford, director of advertising and sales since 1952, has resigned, and has been replaced by Gerald L. Hartman.



CHECK THESE ADVANTAGES AGAINST ANY OTHER LIQUID LINE FILTER-DRIER

AMAZING PRICE: Check SUPER-FLO'S price, for both original equipment and replacement, against ordinary driers which do not have massive depth filters, molded drying elements, and spun-end copper shells.

DEPTH FILTERING: A massive fiberglas bag, with unsurpassed depth filtering efficiency, to remove unprecedented quantities of even the most minute foreign particles.

MOLDED DRYING: The famous molded Remeal drying element, field-proven most effective for permanent refrigerant drying, even at liquid-line temperatures. Strong, stable, won't powder.

Plus . . . Spun-end Copper Shells . . . Free Flow . . . Sizes Thru 5-hp.

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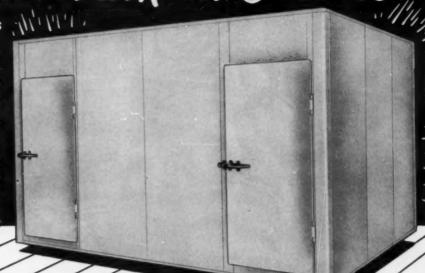
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W Walk-in Coolers

TEMPERATURE COOLERS MULTI-TEMP COOLERS WALK-IN FREEZERS

Uniflow specializes in meeting your unusual and special requirements-send us your problem and our Engineering Department will furnish recommendations, quotations and blue prints within forty-eight hours.

This is your opportunity to use our facilities to bid on businesses you were unable to handle before. Write to THOMAS A. MARTIN Sales Manager



UNIFLOW MANUFACTURING CO.

East Lake Road, ERIE, PENNA.

This is the famous Uniflow 9'x12'x7'7" Walk-In Cooler



Circle No. 110 on Render Service Card



how to make <u>hot</u> sales prospects out of <u>cold</u> customers!

You'll melt sales resistance in a hurry with Ranco's new window air conditioner controls . . . just the ticket for modernizing old-fashioned window air conditioners not equipped with controls.

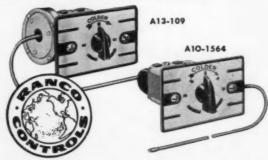
Offices and homes both offer you tremendous sales possibilities. These new controls prevent over-cooling . . . hold down humidity . . . main-

tain a "just right" indoor climate day and night. Get your share of this extra modernization business with Ranco's new A13-109 (3° differential), or A10-1564 (5° differential) control. Remember—whatever your control problem—it pays to see your Ranco wholesaler first. He has over 4,000 replacements—far more than available from any other source!

Replace it right The First Time With Ranco!

Ranco Inc.

COLUMBUS 1, OHIO



WORLD'S LARGEST MANUFACTURER OF REFRIGERATION CONTROLS

Circle No. 112 on Reader Service Card

THE SERVICE MAN'S DEPARTMENT

HERE'S HOW!

Just How Effective Are Mechanical Dehumidifiers?

How much water will a mechanically refrigerated dehumidifier pull out of the air?

The answer to that question varies widely with the temperature and humidity conditions at the time and place the unit is put into operation, but manufacturers of this type of equipment have cooperated in the compilation of some general data on this subject which is designed to serve as a basic guide to the effectiveness of these units.

The following table shows the summary of estimates compiled by these manufacturers to indicate the gallons of water removed in 24 hours under the listed conditions of temperature and relative humidity:

If the room	And the relative			
temperature	humidity is			
ls	60%	70%	80%	90%
60°F.	.7	1.52	1.7	2.1
70°F.	1.1	1.7	2.4	2.85
80°F.	1.2	2.5	3.1	3.58
90°F.	2.0	2.9	3.81	4.27

Dehydration Essential After Major Compressor Repair

When a hermetically sealed refrigeration system is opened to the atmosphere for any length of time, for any reason whatsoever, steps must be taken to evacuate and dehydrate the system so as to leave no traces of air or moisture. This is particularly true after a major overhaul of the compressor.

In such cases the completed compressor should be placed in an oven which is held at about 250F for 8 hours while a vacuum of 0.1" of mercury absolute is maintained on the compressor. Break the vacuum with clean, dry refrigerant at slightly above atmospheric pressure and keep the compressor sealed.

I DO IT THIS WAY

N a recent call to service a commercial air conditioner powered by a semi-hermetic unit I found no oil pressure, loss of oil, and the fact that the unit would not pull a vacuum. To aggravate the situation, I had no oil pump on the truck. Consequently I either had to dismantle the unit and pour the oil in, with considerable loss of time and refrigerant, or else return to the shop for the pump.

To avoid this situation in the future, I determined to construct a special piece of equipment. Securing a discarded quart-size oil filter, I removed the cartridge and applied a 1/4" flare connection on one end for gas pressure in, and the same type fitting on the other end for oil out. Then to the side of the filter shell I applied a 1/2" 90-degree ell with plug for filling.

for filling.

With this arrangement, I can use either pressure from the unit itself as a propellant for the oil, or else connect a refrigerant cylinder to the oil container. By timing, I find that it takes less than 10 seconds to charge I quart of oil in this manner.

Capacity of the cartridge is slightly more than I quart, and by measuring the amount poured in I can charge up to 40 ounces of oil. I keep my cartridge filled and capped, ready for service at any time.

John E. Gilmore Nashville, Tenn.

Set the compressor in place and quickly make all the necessary piping connections. Evacuate the complete system at a vacuum of 0.1" of mercury absolute for at least four times as long as the compressor was exposed during the connecting process.

Next, break the vacuum with refrigerant, then re-evacuate. Charge the system with the prescribed amount of the correct refrigerant and set it in operation.

Motors Operate Better If Proper Phase Is Used

Although three-phase motors of 3 to 10 hp, such as used for air conditioning and pumping purposes, can be used where only single-phase power is available with phase converters, the ordinary single-phase motor is preferable on an economic basis, according to reports from the American Institute of Electrical Engineers.

Analysis shows that the threephase motor with converter on single-phase supply has a considerably lower breakdown torque than the motor alone supplied with balanced three-phase power. This and other performance features suggest that, after all, the single-phase motor is economically preferable.

The phase converter usually consists of two capacitors, one for starting and one for running, with a voltage sensitive relay that shifts from one to the other when the motor comes up to speed.

Indications are the AIEE reports, that the simple phase converter cannot produce completely balanced terminal voltages at full load, so there must be a derating of the three-phase motor when operated in such a way.

If this were not done, one would be operating the motor in a manner that experience has indicated would shorten its life and would not provide the satisfactory margin for over-loads and line voltage variation. Ability to carry only normal load does not provide satisfaction.

In addition to the factors of rela-

tive cost between the three-phase motor and single-phase motor, there are many practical factors to be considered, such as convenience to the manufacturers who ship equipment with three-phase motors installed. These performance results and the formulation from which they were derived indicate that an oversized three-phase motor will be required if the motor is to give normal performance when operated on single-phase with a phase converter.

2 OUTLETS NAMED FOR G-E HEATING, COOLING

Heating and Air Conditioning Supply, Inc., Baltimore, Md. has been appointed wholesale distributor of G-E home heating and cooling products in the Baltimore area according to General Electric's Air Conditioning Div.

Also announced was the appointment of the Love Sheet Metal Co.. Indianapolis, Ind., as wholesale distributor for home heating and cooling products in the Indianapolis area.

AIRTEMP UNITS COOL MALAYAN HOSPITAL

Room air conditioners, packaged units, and a central duct system with two 30-hp radial compressors, are included in the equipment which will be installed in the 5-story Kandang Kerbau Hospital, Singapore, Malaya by Kian Gwan Co., Chrysler Airtemp distributors in Malaya.

Conditioned air is distributed throughout the hospital through furred-in ceiling ducts. Corridors will act as return air ducts. The heavier central station equipment will be housed in a penthouse equipment room while the packaged units and room air conditioners will be used on lower floors.

NAMES WISCONSIN OUTLET

Vincent Refrigerating & Heating Supply Co., Milwaukee, has been appointed wholesale supplier for Servel, Inc., commercial electric refrigeration units and factory renewal parts for the eastern Wisconsin territory.

MONTREAL FIRM NAMED AS COPELAND JOBBER

Copeland Refrigeration Corp. has announced the appointment of Railway and Engineering Specialties, Ltd. of Montreal as exclusive authorized Copeland jobbers for Canada, except for British Columbia which is served by Refrigerative Supply, Ltd., Vancouver.

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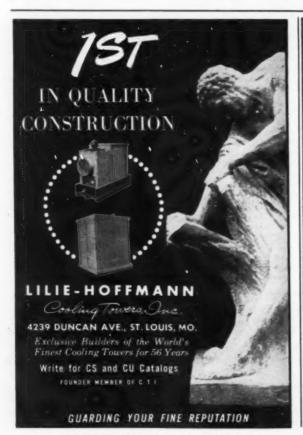
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CENTRIFUGAL SYSTEM TO COOL GREENBRIER WING

Worthington Corp. has received an order to supply the central refrigeration equipment to air condition a wing now being added to The Greenbrier in White Sulphur Springs, West Virginia.

The new addition will have an auditorium with a capacity of 1,075 for meetings and 860 for banquets. A theater will accommodate 400. Various sized smaller meeting rooms also are included.

The Worthington equipment will deliver approximately 350 tons of cooling provided by a centrifugal refrigeration system with a 350-hp. squirrel cage motor and gears.





ZONED SYSTEM COOLS N.Y. CLOTHING MILL

In an unusual remodeling operation featuring the use of selfcontained central station air conditioning equipment with built in evaporative condensers and steam heat coils, an obsolete Long Island City, N. Y., factory building is being transformed into a modern, fully equipped plant for one of the country's largest clothing mills.

When Knitwear Hobby Mills, Inc., purchased the four-story and basement structure, the building was equipped with neither heating, air conditioning or process piping. A flexible zoned air conditioning and heating system serving all areas of the building is now being installed by J. W. Hubert Corp., heating and air conditioning contractor. The contractor is installing United States Air Conditioning Corp.'s dual and single circuit "refrigerated Kooleraire" units with a total cooling ca-

HE coolest cooler in America may well be the lodgings offered to lawbreakers in Olney, Ill. now that contracts have been placed for completely air conditioning the new municipal building which houses the city jail, along with the mayor's office, police department, court room and waterworks department. Mayor M. D. Borahm, commenting on the new building which will be both heated and cooled by a 5-ton Servel gas operated conditioner, stated, After a comfortable night in our air conditioned jail, our prisoners won't get so hot under the collar when they pay their fines."

pacity of 175 tons. Four new high pressure steam boilers have been installed

The cooling and heating requirements of the third and fourth floors of the building, already in use, are being handled by a DRK-25 and a DRK-20 per floor. The units are located in separate equipment rooms, which serve as plenums for fresh air and evaporative condenser air supply, taken through automatically controlled intake lampers in the outside building walls.

These floors, in addition to general manufacturing operations, contain pressing rooms equipped with steam-operated machinery. The air conditioning supply to these spaces is supplemented by blower-heater units providing fresh air supply heated in winter, and exhaust for the steam from the machinery.

Additional Usairco RK equipment ranging in size from 5 to 25 tons will be installed on the first two floors and in the basement of the building by the construction firm to serve plant facilities and office space there.

The overall air conditioning and heating plan consists of nine separate central station systems and can meet the diversified needs of the various plant areas as determined by their individual functions. Furthermore, if some departments are at work when others are not, only those units serving the active areas need operate.

The design of the DRK equipment permits each unit to operate at half-capacity when required, with no reduction in efficiency. The built-in evaporative condenser in each unit provides recirculation of about 95% of the cooling water.

BUY FROM YOUR REFRIGERATION WHOLESALER

The customer knows you're using the best when you use a C-D motor-starting

capacitor.

Next time insist on C-D capacitors. The preferred line among experienced repair men. Write for your copy of C-D's famous motor capacitor manual and catalog. Dept. CR-54

Cornell-Dubilier Electric Corp., South Plainfield, N. J.

PLANTS IN SOUTH PLAINFIELD. N. J.; NEW BEDFORD, WORCESTER AND CAMBRIDGE, MASS .: PROVIDENCE AND HOPE VALLEY. R. I.; INDIANAPOLIS, IND.; SANFORD AND FUQUAY SPRINGS, N. C.; AND SUBSIDIARY, THE RADIART CORP., CLEVELAND, OHIO.





There are more C-D capacitors in use today than any other make.



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Year'round Thermostat

...has built-in Heat-Off-Cool switch

- SEPARATE temperature settings for heating and cooling
- · Use year around for on-off control of fan-coil or similar combination heating and cooling
- Ratings to 1/4 hp
- Removable lever tips for adjustment with special key provided
- · Low differential—approximately 2°
- Champagne gold finished cover in modern design



• This control has no equal ... you get more, for less!

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for Bulletin No. T-1

... complete data including helpful wiring diagrams.

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KARYALI. COMPARTMENTS give you more room, more strength for less money. They are built in 78"—88"—96" and 108" sizes to fit full length of truck bed on any one-half, three quarter, or one ton pick-up. One key fits both locks and drip mouldings prevent ice freeze and rust. Shipped complete with mounting brackets for easy installation with ordinary tools.

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	Call	ATla	ntic 1-0	470
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KARYALL BODY, INC. 8221 Clinton Road Depa

Circle No. 121 on Reader Service Card

AUTOMOBILE . . .

Continued from page 90

1

control problem crops up in relation to compressor and automobile engine speeds, as at present.

Kent could not predict what shape automobile air conditioners will finally assume, and said that his company, like all others, will adopt whichever system proves to be the best, both operationally and finan-

What About "Packages"?

Presenting the case for packagedunits, F. W. Edwards, sales manager, Heater Div., Eaton Mfg. Co., stated that the "New Look" in automotive air conditioning will be the development of a completely packaged unit containing all the components of an air conditioning system - including coils, fans compressor, etc. - located in the trunk of a car and driven by a flexible shaft off the automobile engine.

Edwards was one of three guest speakers who appeared before a recent meeting of the Cleveland chapter of SAE.

Simple Installation Stressed

Edwards pointed out that the greatest advances in refrigeration and air conditioning have followed the development of packaged units and that, logically, a packaged automobile air conditioning unit will soon solve the many problems encountered in trying to adapt present equipment to the specialized needs of the automobile field.

Giving proof to his prediction, Edwards stated that at least 10 different firms are presently at work on the development of such a unit.

These packaged units, he continued, will have a "plug-in" feature, will weigh considerably less than the heavy units now employed, and, differing from present day equipment, will have the greatest weight located over the rear axle of the car.

Edwards stressed the importance of simple and economical installation and removal, and said eventually the units will be similar to car

BUY FROM YOUR REFRIGERATION WHOLESALER

Circle No. 122 on Reader Service Card 142

Write for Catalog 50B

MANUFACTURING CO

GRAND AVENUE & ATH ST

WEST DES MOINES, IOWA

radios in their ease of installation and service.

The units will cost much less in the future, Edwards believes, because although the same components will be used, the advanced production in packaged units will lower total costs.

A move toward mechanical or hydraulic drives for the compressor is underway, he said, because the conditioner will need a power supply of up to 5 hp., and the electrical pull for an electric motor of that capacity would be too great. These mechanical drives consist basically of a gear arrangement on the automobile engine connected to the air conditioner compressor by means of a flexible drive shaft.

Packaged Units Aid Sales

Use of packaged units will allow dealers to merchandise the units more effectively and will permit dealers to contract with local refrigeration and air conditioning contractors for service and repair, he concluded.

Edwards' predictions of things to come followed comments by John Moren, supervisor of the Heating and Air Conditioning Laboratory for Chrysler Central Engineering, Chrysler Corp., who spoke on the air conditioning system installed in Chrysler automobiles, and H. J. Joyce, supervisor, Heating and Ventilating Section and Electrical Engineering for Automotive Heating, Ford Motor Co., who outlined production and service aspects of autotomotive air conditioning.

Moren stated that compressors will undergo the greatest development of all components. He pointed out the decrease in compressor endurance as motor speeds increase, since compressors are set to operate at 625 rpm at 25 mph. A minimum of 20-25 cfm for each person riding in the car is the necessary volume of supply air in automotive conditioning, Moren stated.

Joyce described the production difficulties encountered in the two basic methods of original installation of present-day air conditioning units. Final-line and off-line installation both require considerable time and cost, he said.

A third method of installation is

being tested, Joyce continued, in which the car dealer would handle the installation. This would require the dealer to purchase special tools and equipment, and maintain technically qualified personnel to do this type of work.

Service Is Key Factor

In the belief that an automobile mechanic will have experience sufficient to handle all but the most complex air conditioning problems, some dealers are going ahead with present personnel in their service departments. In one large city, he stated, the City Council has exempted automobile mechanics from the necessity of obtaining licenses to install and service automobile air conditioners.

In some instances, properly trained high school students are employed for that purpose, he said. In any event, he stated, complete installation and checking will take up to 24 man-hours.

Servicemen may prove to be the greatest factor in the success or failure of automobile air conditioning, Joyce concluded.



Engineers specify PACKLESS Vibration Absorbers when excessive compressor line movement is encountered. Available to fit 1/4" O.D. to 101/8" O.D. copper tubing.

Write for Bulletin VA-3

PACKLESS METAL HOSE INC.

31-10 WINTHROP AVE. NEW ROCHELLE, N.Y.
Circle No. 118 on Render Service Card

and AIR CONDITIONING . MAY, 1954



Sulfor AUTOMATIC CONDENSATE DISPOSAL UNIT

Pumps Up to a 22-ft. Head!



Specially designed for the disposal of water and other condensate liquids which collect in air conditioning squipment and similar apparata. Completely self-contained. Unit is connected to apparatus so that liquid flows into intelligent of receiving tank. At a predetermined height, pump starts sutematically and or receiving tank. Descriptions including distribution and tank of the property of the

SPECIFICATIONS

TANK Approx. 2½ gals. capacity with 3" inlet, ½" outlet. Steel with corrosive - resistant baked enamel finish.
PUMP All-bronze contriugal. De-

livery approx. 5/2 GPM at 10-ft. head to 1 GPM at 22-ft. head. Shut off at 24 ft. MOTOR 1/15 HP, single phase.

OVERALL DIMENSIONS 8" wide, 7" deep, 12" long, Height to top of pump, 12", Weight apprex. 20 lbs.

CONTROL Automatic float

set to pump approx. ¾ gal, of condensate at each operation. Check

valve in sutlet prevents liquid from draining back into tank,

WRITE FOR LITERATURE AND PRICES

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112 W. WILSON AVENUE NORFOLK, VIRGINIA

Circle No. 119 on Reader Service Card

Chrysler Dealers Attention!

Pressure-Speed"

Adding Oil to a Chrysler Unit Made Easy Equip your Servicemen with Good Tools



No Dirt No Mess No Moisture ORDER TODAY! \$14.95

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For Bonding Rubber Refrigerator DOOR GASKETS To Metal and Wood Surfaces

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- Holds permanently. In many cases "pull test" shows the rubber will tear before the cement releases.
- · Sold in handy 1/2 and 1 pint cans by wholesalers everywhere.



Circle No. 117 on Reader Service Card

SHEET METAL . . .

Continued from page 84

install extra fittings, or make other adjustments, we simply assign it to our own shop as part of the normal installation costs.

"Another definitely valuable aspect of operating our own sheet metal shop," Nuckols explains, "lies in the field of developing new business. We make it a policy to take the heating or air conditioning prospect on a tour of our sheet metal shop, pointing out the large amount of equipment - benders, cutters. shears, etc., which we maintain, plus the banks of prefabricated parts always kept on hand.

"Realizing that we can contract the entire installation all on one ticket, without the use of outside help, plays a big part in helping the hard-headed, practical businessman to make up his mind. In many instances, it has been obvious that the completeness of our department was the major contributing factor to receiving the contract.'

Nuckols-Cathey's sheet metal shop

is supervised by an expert foreman who is able to make up parts and requirements lists from the specifications, as well as designing custom pieces to fit peculiar problems. His long experience has made it possible for installation mechanics on the job to merely telephone in measurements and a general description, when a ducting problem is encountered, with the surety that the part will be rushed to completion, and delivered immediately by truck.

1

"Many hours which might otherwise have gone to waste are eliminated in this way," Nuckols points

HEATPUMPS are inexpensive to operate in areas where electricity is less than 2c per kilowatt hour, according to A. M. Raney of General Electric Supply Co., Richmond, Va., who spoke before the Second Annual Refrigeration Trade Association Convention held recently in Richmond.

"Electricity when purchased for approximately 2c per kilowatt hour is comparable as, far as the amount of heat obtained from it in operating the heat pump, to oil retailing at 13.5c per gallon or gas at about 11c per therm.

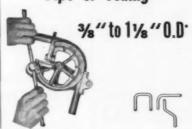
Raney noted that many county, city and other bodies were able to buy electricity often as cheaply as Ic per kwh. With a heat pump installation, these parties can save heating costs since Ic per kwh electricity is equal to 7.5c oil, and oil cannot be bought for less than 12c per gallon even by municipalities.

out. "We believe that the time-saving aspect is so important that we keep one full-time man on the bench the year around. He is there to back up the materials and men already provided, and whenever quirks develop -as they do in every installation he is standing by to take care of the problem.

"For these and many other reasons, maintenance of our own sheet metal shop has been a highly satisfactory experience."

Handy Tube Bender

Smoothly Bends ANY Pipe or Tubing



· Just a twist of the wrist assures perfect, even bends . . right-angle, any angle, U and offset - every time Eliminate need for els. No

more quesses - no kinks! Save enough time, labor and money on ONE Job to pay for your Handy Bender.

See your supply free folder today.

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430 N. WILLOW ROAD - EVANSVILLE, IND.

PERFECTION APPOINTS CHICAGO DISTRIBUTOR

Perfection Stove Co., Cleveland, Ohio, has appointed Mechanical Home Systems, Inc., Chicago, Ill., as the exclusive distributor of its commercial room air conditioners in the Chicago area.

Circle No. 116 on Reader Service Card MAY, 1954 .

OPPORTUNITIES

(Classified Advertising)

Rates: for "Positions Wanted, \$6.50 minimum, limit 25 words. For all other classifications, \$8.00 minimum for 25 words or under, each additional word 20¢. Boldface type or all capitals, \$10.00 minimum for 25 words or under, each additional word 25¢.

POSITIONS WANTED

Refrigeration Air-Conditioning Engineer.
Over 20 years experience engineering, repairing, installing. Presently employed General Foreman. Extensive ammonia experience. Prefer Western States. Would consider foreign. Box 5254, COMMERCIAL REFRIGERATION & AIR CONDITIONING.

POSITIONS AVAILABLE

REGIONAL SALES MANAGER—MAJOR MANUFACTURER OF COMMAJOR MANUFACTURER OF COMPLETE LINE OF CEILING SUSPENDED COILS, AIR CONDITIONING
COILS, AND EVAPORATIVE CONDENSERS HAS OPENING FOR QUALIFIED MAN AS REGIONAL SALES
MANAGER. HIGH COMPENSATION
POTENTIAL IN A GROWING BUSINESS. SEND RESUME AND PERSONAL EXPERIENCE TO BOX 5154
COMMERCIAL REFRIGERATION &
AIR CONDITIONING.

CYRUS SHANK CO. IN NEW LOCATION

Frank Krupp of the Cyrus Shank Co., manufacturers of refrigeration valves, announces that they are moving to larger space at 4646 W. 12th Place, Chicago 50, III.

GOVERNMENT BUILDING COOLED BY ZONE SYSTEM

Increased economy in operation of the state government is foreseen with the official dedication in Lansing of the Stevens T. Mason office building, first in a series of new state buildings.

Greater efficiency and easier maintenance are expected to result from the \$500,000 Carrier "Weathermaster' air conditioning system which is featured in the new structure.

During last September's heat wave the federal government reported that it sent 25,000 workers in non-air conditioned offices home daily at 2 p.m., at a loss to taxpayers of over \$140,000 per day.

In the new Stevens building, this cost to the taxpayers will be eliminated in Michigan.

Designed by Carrier Corp., the special conduit system for the eightstory building provides 742 units in two zones, operating from central equipment but adjustable by the people working in the area, plus a high pressure interior zone, and three small package units serving the lobby, cafeteria and general

Cooling is provided by a 440-ton capacity absorption machine on the roof of the building and a 210-ton capacity centrifugal machine in the basement.

Illinois



You sell quality, trouble-free cooling in these electric units that operate wet or dry. In 3 sizes...4, 5, 6 ft. Unobstructed interiors. Baked Enamel finish for beauty and sanitation.

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The BEVCO Company, Inc.





Michigan Avn.

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